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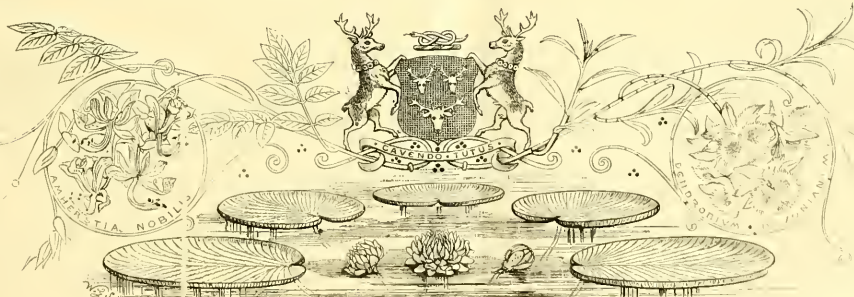
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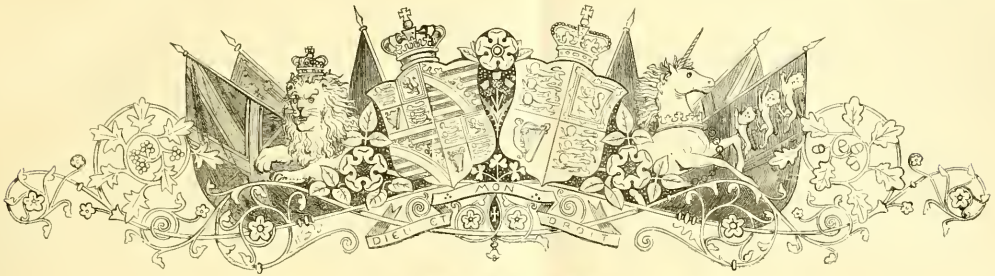


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NOVELTIES OF 1896.

A REVIEW of the subjects brought into cultivation during the year 1896, either by the efforts of the importer or by the skill of the hybridist, discloses the fact that the industry of the gardener in the matter of home-raised hybrids, in the showier genera to which he invariably fixes his attention, has been by far the most successful, and in spite of the evidence that careless or unhappy cross-fertilisation has brought, especially in *Cypripedium*, many kinds which may well be denominated "weeds," the number of beautiful novelties obtained will more than compensate for their presence until they gradually disappear after the manner of most plants unworthy of cultivation.

THE ORCHIDS

may be taken first, and among them we find that no importation in quantity of any species worthy to rank with the favourite *Dendrobium Phalaenopsis Schroderianum*, or with the first importation in quantity of the favourite *Cattleya labiata autumnalis*, has been made, and the main interest in this class centres in the pretty, or botanical species, which have come either as isolated plants, or in the small quantities which such rare gems usually arrive.

To glance first at the chief things which have flowed for the first time, or been exhibited and received awards from amateur's collections, we find that—

Baron Sir H. SCHRODER, whose grand collection of priceless varieties of *Odontoglossum crispum* increases in vigour every year, and plainly answers the oft-mooted question, "Do *Odontoglossums*, and many other Orchids, inevitably decline under cultivation?" Those who watch the successive appearances of the unique varieties of *O. crispum* from "The Dell," note the increasing vigour and size and beauty of flower, of which *O. c. nobiliss*, which when first shown was considered beautiful enough, but which in its second appearance totally eclipsed its former effort, a feat which was again excelled when it took a Silver Medal at the Royal Horticultural Society on February 11, 1896. So also with *Cattleya* × *Hardyana splendens*, and *Vanda teres gigantea*, both of which probably rather from good culture than from any extraordinary quality in themselves,

so far surpassed those previously seen as to secure First-class Certificates. *Odontoglossum crispum Eveline*, shown from The Dell, is a grand form, with fine dark purple markings; *Dendrobium thyrsoiflorum Lowianum*, a remarkable variety, with a totally different labellum to the type; and early in the year the pretty *Vanda* × *Charlesworthii* was first shown from The Dell.

Sir TREVOR LAWRENCE, Bart., President of the Royal Horticultural Society, possesses a wonderful collection, in which doubtless many a pretty and rare species flowers without the event being recorded. At the last meeting of Royal Horticultural Society, in the showy group of Burford hybrid *Calanthes*, some few new forms appeared, which have yet to develop; and at previous meetings the handsome *Cattleya Trianae Reine des Belges*, the fine *Cymbidium* × *Lowio-obrunneum*, the showy *Dendrobium* × *Chio, D.* × *pallens, D.* × *specio-Kingianum*, and *D.* × *Wiganis* have been Certificated, the last-named, which was first shown by Sir Frederick Wigan, being also exhibited by Messrs. Veitch, all three exhibitors making the cross (nobile × signatum) independently of each other. Sir Trevor Lawrence also showed for the first time the distinct-looking *Odontoglossum aspidorhinum*, and succeeded in getting recognised the rare *Dendrobium cymbidioides*, *Zygopetalum grandiflorum*, *Platyclitium uncatia*, *Bulbophyllum auricomum*, *Cirrhopetalum uncatia*, and many other species which, like those mentioned, are well known to science, but seldom seen in gardens.

THE HON. WALTER ROTHSCHILD, a great authority in other branches of natural history, continues to pursue with increasing interest the scientific side of Orchid culture, and his large and curious collection has during the year produced many remarkable and undoubted new species. Of them, *Stanhopea impressa*, Rolfe, had a totally new feature in its showy flowers, viz., a deep irregular indentation in the under-side of the lip; and *S. Wardi superba*, as a variety, is far in advance of any of its section in point of beauty. *Chondrorhyncha albicans*, Rolfe, is a very interesting species, seemingly combining *Steudii* and *Chondrorhyncha*; *Mormodes badium*, a very showy new species; and the wonderful *Bulbophyllum Ericsoni*, which fully bears out Dr. Kranzlin's description, and of which we hope to give an illustration from the spike kindly sent by Mr. Rothschild. Both these fine plants were imported by Messrs. F. Sander & Co., and only one of each has flowered, which are now incorporated in the Tring Park collection. Other plants for which the Hon. Walter Rothschild has received Certificates at the Royal Horticultural Society during the past year are *Catasetum* × *splendens leucanthum*, *Cynoches maculatum*, *Houlletia tigrina*, of which probably H. Lansbergi and H.

Loxiana are at best only varieties; several new, but undetermined, *Cirrhopetalum* and *Bulbophyllum*; and of rare species, not exhibited, the handsome *Disa pulchra*, *Auseilia confusa*, *Catasetum uncatum*, and other *Catasetums*, &c. (referred to in last week's *Gardeners' Chronicle*).

NORMAN C. COOKSON, Esq., from his famed collection of home-raised hybrid Orchids at Wylam, Newcastle, has exhibited and received awards for several remarkable and showy Orchids, which are a distinct gain to gardens. Of these, *Odontoglossum* × *Halli-crispum* deserves special mention, as much for its great beauty as for its general interest, on account of *Odontoglossums* being difficult to raise and perfect. Of *Dendrobiums*, Mr. Cookson's *D.* × *Dulce* "Oakwood variety" and *D.* × *Dulce picturatum* are two bright flowers, the latter curiously striped and flaked; *D.* × *Murrayi* (albo-sanguineum × nobile); and *D.* × *Kenneth* (Benoniis × *McCarruthis*), two remarkable crosses, the former for beauty and chaste tinting being by far the better; *D.* × *Doris* and *D.* × *Cassiope virginale*, are two very pretty white kinds with maroon spot on the lip; and *Lelio-Cattleya* × *Doris* (harpophylla × *Trianae*); *L. C.* × *Bryan* (*C. Gaskelliana* × *L. crispata*) and *L. C.* × *Clivia* (*pumila prestans* × *Dawsonia*), all previously noted, received Certificates in 1896.

To Mr. Cookson's labours also are due the verification of the record of *Cattleya* × *Hardyana* by home-raised seedlings; and the still more interesting fact that what are called "albinos" come true from seeds, he having flowered *Cypripedium Lawrenceanum Hyacuum*, raised, and apparently improved, and who has kindly forwarded a flower, which we hope to illustrate. In the same way the kindred *albedo, C. callousum Sanderi*, is also producing flowers true to their variety with Mr. Cookson.

The Right Hon. JOSEPH CHAMBERLAIN during the year gives as the first-fruits of his efforts in raising hybrid Orchids, the pretty *Masdevallia* × *Shuttryana*, Chamberlain's variety, distinct enough from the original to warrant an independent name were it not for the "exigencies" which affect florists as well as politicians. In this case the original name for the recorded parentage had to be observed. Two other very pretty hybrids from Highbury are *Lelio-Cattleya* × *Highburyana* (*C. Lawrenceana* × *L. cinnabarina*) and *Dendrobium* × *Andromeda* (*Cassiope* × *Leecchiana*).

ELIJAH ASHWORTH, Esq., of Harefield Hall, Wiltshire, Cheshire, one of the most liberal of Orchid patrons, has assimilated into his collection some of the best plants of the past season, among which are the lovely albino *Laelia pumila alba* "E. Ashworth" (see fig. p. 11), for which he received a First-class Certificate at the last Royal Horticultural Society's meeting of the year. Other first-class novelties of his collection are the nearly pure white *Laelia purpurata Lewisii* (first shown by Messrs Lewis & Co., of Southgate, at the Temple); *Laelio-Cattleya* × *Schilleriana*, Ashworth's var.; the fine *L. purpurata* Ashworthiana, whose petals are almost as richly coloured as the lip, and finely expanded *Cattleya*

labiata Mrs. E. Ashworth, a white variety, deemed by the Orchid Committee to be good enough for a First-class Certificate; *Odontoglossum crispum* Ashworthianum, one of the very best blotched kinds; and *O. luteo-purpureum* Ashworthianum, a superb form of that species.

From Sir FREDERICK WIGAN'S gardens at East Sheen the best things exhibited and certificated during the year are *Dendrobium* × *Wiganie* (nobile × *signatum*), *Cattleya Mossie Beatrice*, *Lælia purpurata* Arthur Wigao, *Miltonia vexillaria* Memoria G. D. Owen, and *Ocidium varicosum giganteum*, all of the highest order of merit in their respective classes; and the singular and pretty *Epilendrum hastatum*.

FREO HARDY, Esq., Ashton-on-Mersey, brought out the very remarkable *Cypripedium*, Fred Hardy, which is probably an alpine of C. Charlesworthi, although it may be a natural hybrid; *Dendrobium* × *Clio*, Tyntesfield variety, a very fine variation, very different from the other forms; *D. × Clio album*, and a very fine form of *D. × Schneiderianum*.

C. L. N. INGRAM, Esq., of Goddington, holds the record for the number of beautiful home-raised *Cattleyas* and *Lælia-Cattleyas* raised by him, which have been certificated during 1896. Of these *Lælia-Cattleya* × *Chas. Darwin* is an ally of C. × *Fowleri*; *L. C. × Eudora* (*L. purpurata* × C. *Mendeli*), like a very fine *L. C. × eximia*; *L. C. × Sir Wm. Ingram* (*C. aurea* × *L. purpurata*), a very large and showy flower; and *L. C. × Seraph*, *L. C. × Cicero* (*C. intermedia* × *L. C. elegans*), *L. C. × Pytho* (*L. C. × elegans* × C. *Loddigesii*), all good in their way. Of the *Cattleyas*, C. × *Wm. Murray* var. *fulgens* (*Lawrenceana* × *Mendeli*); C. × *Eclipse* (*maxima* × *Skioneri*); C. × *Jupiter* (*Lawrenceana* × *Warszewiczii*); and C. × *Preciosa* (*Ludlemanniana* × *Lawrenceana*), were the best; and of fine varieties of imported species the *Cattleya Mossie* "Chas. Ingram," shown at the Temple; and C. *Percivaliana*, Ingram's variety, exhibited Jan. 14, were good examples.

Major JOYCE, Sunningdale Park, received a First-class Certificate for *Cypripedium exul*, Joyce's variety, which in size and beauty far exceeds all others; and also a like award for the fine white *Diacrium bicornutum*, which grows so well with him, that if an old plant, it was exhibited in a new guise; also a fine variety of *Miltonia canadiensis grandiflora*, *Stanhopea eburnea*, and *Lælia monophylla*.

R. I. MEASURES, Esq., received a First-class Certificate for his charming pure white *Cattleya labiata* R. I. Measures; and also exhibited *Cypripedium* × *Woottoni* C. × *Chapmani*, and other beautiful new hybrids, as well as some interesting botanical species.

Of others, new or distinct, as varieties, may be mentioned the *Lælia purpurata* Mrs. Crawshaw, *Odontoglossum* × *Coradinei* Rosefeld variety, and the very handsome *Cattleya Trianae* Crawshayans, of DE B. CRAWSHAY, Esq. *Cattleya* × *Lawre-Mossie*, and *Odontoglossum crispum* Ardarrow variety, of R. BROOMAN-WHITE, Esq.; the *Odontoglossum crispum* Golden Queen, of W. THOMPSON, Esq.; the singular *Sophro-Lælia* × *Mariotti*, of Sir WM. MARRIOTT; the *Cypripedium* × *Cowleyanum* "Anna Louise," shown at the Temple, and C. × *Schofieldianum*, by G. W. LAW-SCHOFIELD, Esq.; the pure white *Cattleya maxima alba*, for which HAMAR BASS, Esq., received a First-class Certificate on November 10; the *Cattleya Dowiana* Marantia, and *Cypripedium Calypso*, Stand Hall variety, of THOS. STATTER, Esq.; the *Cattleya labiata* Ashford var., of G. S. BALL, Esq., one of the finest and richest in colour yet seen; *Odontoglossum crispum* "Princes," of W. VANNER, Esq.; the fine hybrid *Masdevallia* × *Curlei* (*macpura*? *ovarensis* ♂) raised and flowered by ALEX. CURLE, Esq., of Melrose; *Cattleya* × *Hardyana* Wheatley's var., *Odontoglossum crispum* Lord Sherborne, and O. C. *Victoris* Ellis, brought out by WELBORN S. ELLIS, Esq., of Dorking, an excellent cultivator of *Odontoglossums*; the O. *Humeanum* excellent and distinct, of H. MASON, Esq., Shipley, another clever grower of this genus; *Cypripedium* × *James Buckingham* (× *enfielskense* × *bellatulum*) of A. J. HOLLINGTON, Esq., of Enfield; and C. × *Harri-Darwin* (*Harrisianum* ×

Sanderianum), shown by W. C. CLARK, Esq., of Liverpool, and which is the first true cross with the extraordinary C. *Sanderianum*, from which much was expected. In this case the very darkly-tinted flower is more curious than beautiful.

(To be continued.)

NEW OR NOTEWORTHY PLANTS.

LÆLIO-CATTELEYA × ROSALIND (C. TRIANA E ♀, L. C. × DOMINIANA ♂).

OUR illustration (fig. 1, p. 3) represents the above-named beautiful hybrid, for which Messrs. Jas. Veitch & Sons, Royal Exotic Nursery, King's Road, Chelsea, received a First-class Certificate when they exhibited it before the Orchid Committee of the Royal Horticultural Society on December 15 last. The general opinion of judges who saw it was that it is one of the very best hybrid Orchids of the year, and apart from that consideration, it is interesting as having for male parent a fine hybrid (*L. C. × Dominiانا*), which appeared with the raisers, Messrs. Jas. Veitch & Sons, in 1878. There were only two plants raised, each differing from the other. They both passed into Baron Schroder's collection. About the parentage of *L. C. Dominiانا* there always existed doubts, but it is generally supposed to have been between *Lælia purpurata* and *Cattleya Dowiana*.

L. C. × Rosalind has French-white sepals, and broad silvery-white petals, over which, except on the margin, there is a delicate tinge of pale rose-pink. The lip is rich yellow at the base, with clear white veining, the side lobes being rosy-purple, with bluish-white veins, and the front bearing a rich dark purple blotch.

PLANTS FROM ASIA MINOR.

Arum Dioscoreidis spectabile.—The leaves of this species are much more undulated than those of *Arum palestinum*. It throws up a flower-stalk about 3 feet in height, bearing a spathe 20 inches in length, of a velvety texture; of a bright, reddish-purple inside, and shading into green above, spotted more or less closely with reddish-purple. The plant requires, according to the collector, Mr. W. Siehe, of Merzina, in Asia Minor, a loamy humus-rich soil, and an abundance of water during the growing period.

Inclaram cæcinium.—This beautiful species blooms in the autumn before the leaves appear. These form a close rosette of from 8 to 12 inches high. The flower-stalk is of about the same height, and a short shaft bears a broad velvety spathe, of a dark reddish-purple. The back is green, spotted with red. It grows on humus-rich, loamy soil.

Heliophyllum Rauwolfii.—One of the most interesting of early-flowering *Araids*. The spathe springs from between the leaves, and is black in colour and velvety in texture. The plant is of dwarf habit, and needs a chalky loam, or marl. All these three species succeed best in the full sun.

Anemone blanda vera.—The true form of this charming *Auemoos*, with its deep blue flowers, is seldom seen in gardens. In dry summers it will succeed if planted below bushes in a humus-rich chalky soil.

Helleborus Helvetici var.—A charming broad-leaved variety. The bulbs throw up two long flower-stalks. The colour of the numerous flowers is exactly that of *Sella sibirica*. It grows on limestone soils.

Colchicum Bornmuelleri.—This species, which also prefers a limestone soil, is certainly one of the most beautiful as well as the largest flowering species of the whole genus.

Colchicum cilicium has somewhat smaller flower-spikes, tipped with red, and dark rose-coloured blossoms.

Colchicum candidum is a particularly free-blooming plant, hitherto unknown in cultivation. It has very delicate white flowers, flushed with pale rose-colour.

Colchicum Ritchei.—A small-flowered rare species, which, unlike other varieties, blooms in the early spring, when the leaves appear. All these species of *Colchicum* prefer a limestone soil.

Corydalis ritefolia.—The tubers, which are 2 inches long, and are found 4 inches below the surface of a chalky soil, throw up from eight to fifteen flower-spikes in the early spring. These are about 4 inches long, and form a compact mass of numerous flowers, the colour of which corresponds with that of *Delphinium nudicaule*. These plants are readily found in a cool-house. U. D., Berlin.

FORESTRY.

THE HOME TIMBER TRADE OF 1896.

SINCE writing on this subject a year ago, the prices of home-grown timber and forest produce generally, cannot be said to have greatly improved. Certainly, the demand for almost every class of timber has increased appreciably during the last three months, and for certain kinds it may truthfully be said that the demand greatly exceeds the supply. This is especially true with Oak, Ash, and Larch of good quality and large size, these meeting with a ready sale at fair prices. Large clean Oak fetches from 1s. 8d. to fully 2s. per foot, and several small parcels of special quality changed hands of late at prices even in excess of any just named. Ash, too, finds a ready market at 1s. 8d. per foot, and that of extra good quality was sold at an auction lately for 2s. per foot. Of course, the difference between clean grown plantation trees, and those from the field and hedgerow is apparent to everyone interested in the conversion of our home-grown woods, and the purchaser pays accordingly. Elm is still a drug in the market, and plenty, of perhaps not the best quality, can be got at the low figures of 6d. per foot, and a large batch of roughish trees recently was sold for 4d. per foot. Large and sound Sycamore finds a ready market at highly remunerative prices, and I recently sold a number of first class trees at 2s. 6d. per foot, but from 1s. 8d. to 2s. is nearer the mark generally.

Then, "maiden" Willow, fit for bat-making, finds a quick sale at high prices, and here again the supply falls far short of the demand. Beech, such as that produced on the Chiltern Hills, and in certain parts of Kent, Surrey, and Hertfordshire, sells readily at fully 1s. per foot, though 8d. is the average price in most parts of the country. The demand for this class of timber is very good at present; but rough, knotty small stuff can hardly be sold at even firewood prices.

Both Alder and Birch fetch 10d. per foot, especially in districts where the making of clog-soles is a part of the industry.

Larch sells perhaps more readily than any other of our home-grown timbers, the quantity of this on hand at the present time being small indeed. From 1s. to 1s. 3d. may be considered fair for that of good quality. Scotch Fir, on the other hand, is hard to get rid of even at the low figure of 6d. per foot, and there are lots at present offered below that price.

Oak-bark is gradually deteriorating in value, and about £3 12s. was paid for large quantities during the past season. When we count 30s. per ton for barking and harvesting, and a further few shillings for delivery and supervision, the profits attending such a precarious business as Oak-bark, even in an ordinary season, are hardly commensurate with the risks involved. Large faggots used to sell readily at 22s. per 100, but plenty are waiting to be sold at 12s. in the London market. Small faggots for fire-lighting—"pimps" they are called in southern England—can now be bought in the city at 2s. 6d. per 100—a contrast to the 4s. 6d. readily got not so many years ago. The split battens, now offered for sale by almost every grocer, have quite ousted the faggot from the market.

Coppice-wood, too, does not fetch one-half of what it did twenty years ago; that of sixteen years' growth, and composed mainly of Ash and Hazel, selling at the present time at from £5 to £6 per acre.

It is confidently to be hoped that the rather brisker trade and better prices of home-grown timber and other forest produce during the past three months will be fully maintained, if not increased, during the year 1897. A. D. Webster.

AMERICAN NOTES.

APPLE SHIPMENTS.

UP to the present the shipments of this year's crop of Apples from Canada and the United States to foreign markets have aggregated nearly

to pay expenses, but because of the pure impossibility of using the entire crop in America. The extreme competition of this season has already resulted in much refinement of methods, and in better marketing of the crop.

THE "ORCHID-FLOWERING" CANNAS.
The so-called "Orchid-flowering" Cannas, introduced by Messrs. Dammann & Co., have received

opinion in this country. It is a strange coincidence that our American plant-breeder, Mr. Luther Burbank, should have originated, contemporaneously with the Messrs. Dammann & Co., and by the same cross, a *Canna* much like *Austria*. The stock of this *Canna*, named *Burbank*, has been bought by a Chicago firm, which will introduce it in the spring.



FIG. 1.—LELIO-CATTELYA × ROSALIND: SEGMENTS SILVERY-WHITE; LIP YELLOW AT THE BASE, PURPLE IN FRONT. (SEE P. 2.)

2,000,000 barrels. These have gone very largely to Liverpool. Of the crop of 1895, less than half a million barrels, all told, were exported. This great increase is due to the unprecedented crop in Apple-growing regions of America. Especially in Canada, New England, and the States along the Great Lakes the crop is phenomenal. The extraordinary shipments to Europe have not been made because of attractive markets, many consignments having failed

prompt and general trial in America. This is particularly true of Italy. Opinions differ considerably as to the value of this new class to American gardeners; but it seems likely that the soft texture of the flowers, inherited from *Canna flaccida*, will be poorly adapted to our dry, sunny, windy atmosphere. We have grown both Italy and *Austria* in our own greenhouses, and regard *Austria* as having the better blossom. This seems to be contrary to the usual

DEATH OF MR. LODEMAN.

The recent tragic death of Mr. E. C. Lodeman, Instructor in Horticulture in Cornell University, removes from us one of our brightest young horticulturists. He had already made for himself a wide reputation, though he was but a young man. His book on *Spraying of Plants*, editorially reviewed in the last volume of the *Gardeners' Chronicle*, is accepted as authority throughout the country. He

was also the author of many valuable bulletins from the Cornell Experiment Station.

SWEET PEA, "CUPID."

This great novelty is now generally spoken of in a tone of disappointment. It has not been able to thrive with most American amateurs. The common opinion is, that while it is superb in California, where it succeeds remarkably, it is not suited to conditions prevailing elsewhere. The introducers, Messrs. W. Atlee Burpee & Co., with commendable enterprise, have secured a pink seedling from Cupid which retains the dwarf form of the parent, and which they promise soon to introduce.

PROFESSOR SARGENT.

We learn with great concern that the residence at Brookline, Mass., of our valued correspondent and eminent friend, Professor Sargent, the Director of the Arnold Arboretum, has been destroyed by fire. The Professor himself, who has recently met with a severe accident, which forced him to walk with crutches, was rescued with great difficulty. The manuscript for the ensuing volumes of the *Silva* has fortunately been preserved, as well as the library and collection of objects of art.

MARRIAGE OF MR. HARRY A. BUNYARD.

The marriage at New York City, on Tuesday, December 1, of Mr. Harry Bunyard to Miss Leona Bach, is announced.

RURAL DECORATIONS.

It often occurs to me that much might be accomplished by a little encouragement on the part of our garden-loving British aristocracy for the culture of flowers by cottagers and others in rural districts. In the south-west of Scotland something in this florally artistic direction has already been achieved. The late Countess of Stair was a lover of horticulture, and it was her delight to inspire the love, and stimulate the refining cultivation of flowers by the cottagers in the vicinity of Lochinch Castle by offering prizes every year to those who were most successful in this work. I have of late been much gratified to learn that Mrs. McDouall, of Logan House, who is at once an eminent and an earnest horticulturist, is contemplating the annual offer of similar rewards to the cottagers on her son's extensive estates; and I doubt not that her example will be followed by other ladies who are equally interested in the promotion of what may be termed, without any exaggeration, the purest of sciences and the noblest of arts. Some of the fairest flowers that exist, such, for example, as the Malodora Lily, and the fragrant Provence Rose, also many of the most attractive of the clove-scented Carnations, have for years been the glory of English cottage gardens. I have proved from experience that in Scotland they can be cultivated with equal success. I am fortunate in having for my nearest neighbour a smith, not by any means an ordinary specimen of hard-labouring humanity, but a man of original mechanic capability, who is also perhaps in virtue of his originality of conception, an enthusiastic horticulturist. His great delight, when his day's work is finished at 7 p.m., is to attend through the whole length of the stumbrous summer evenings to the requirements of his much-admired shrubs and flowers. At that season of the year his house is covered with Honeysuckle and climbing Roses. In his garden may be found many of the finest hardy Azaleas and Rhododendrons; among his interesting collection of the "Queen of Flowers" may be found such fine varieties as Duke of Edinburgh, which seems to bloom with equal beauty everywhere; Baroness Rothschild, of equally accommodating character, though seedless; Merveille de Lyon, Glorie de Dijon, the most widely cultivated of all climbing varieties; Beauty of Waltham, Margaret Dickson, and Belle Lyonaise. Among the Lilies which succeed admirably in his miniature garden, are *Lilium auratum*; *L. tigrinum splendens*, the brightest of its section; *L. longibratum* var. *Harrisii*, and *L. speciosum*. All of these, though planted late, and in a situation with a cold, north-east aspect, yet well sheltered from the devastating winds, have succeeded beyond anticipation. I hope that many others who, while loving flowers, have hitherto neglected their culture, on the ground that

they are not a financial acquisition, may be inspired by his example to follow in his footsteps with equal success.

"When Epicurus to the world had taught

That pleasure was the chiefest good,
His life he to his doctrines brought,
And in a garden's shade this sovereign pleasure sought.

Whoever a true Epicure would be,
May there find cheap and virtuous luxury."

David R. Williamson, Mance of Kirkcaldie, Wigtownshire, N.B.

THE WEEK'S WORK.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower, Burford, Dorset.

Cultural Methods.—Orchid cultivators possessing even long experience have always much to learn in the successful cultivation of a general collection of Orchids. After treating freshly-imported plants successfully for a season or two, we are apt to assume that the method that has been adopted is the correct one. But it often happens after that period that many of the plants commence to deteriorate, and some to disappear altogether. Every grower should try to improve year by year upon his own method of cultivation, and to apply what knowledge he can obtain from others who are uncommonly successful with particular species or varieties to the treatment of his own plants. In every Orchid collection there are probably some plants more or less difficult to cultivate, but many of these may become less troublesome with further experience. There should be practised moderation in all things appertaining to the growth of Orchids. This will result in even temperatures, careful watering, systematic ventilation, and a judicious amount of sun-light; and these are the means towards securing success. A few failures will occur that cannot be traced to inattention to either of the foregoing processes; for instance, in every conceivable way I have been trying to grow *Miltonia spectabilis* and allied species for several years past, during part of which time the plants did fairly well, but they were gradually declining to reach their best point. Some of the plants started again with vigour, but unfortunately this lasted for only a short period. Several years ago I received a sample of what is known as American peat, which apparently consists chiefly of the roots of a hardy Fern (*Osmunda regalis*). The *Miltonias* were tried in it, and fortunately they grew and bloomed exceedingly well, even very small pieces which were nearly dead were awakened to new life. From the first the plants placed in this compost did better, and the improvement has continued; thus proving that heat, moisture, light, or air had nothing whatever to do with the cause of failure in this case. There are several similar instances that I could mention, especially in regard to those species of Orchids that produce small, thread-like roots; but of these I will endeavour to touch upon at the proper seasons.

Miltonias.—The present is a suitable time to examine such *Miltonias* as *M. spectabilis*, *M. Moreliana*, *M. Elviti* and its variety *Lubbersiana*, *M. Peetersiana*, *M. stellata*, *M. Clowesi*, *M. candida*, and *M. Regalli*. Growth has already commenced, and if more root-space is needed, or any plants are not thriving satisfactorily, they may be repotted. Owing to the rambling habit of the two species first-mentioned, it is sometimes necessary to divide the pieces, and remake up the specimen. When doing this, cut away all the useless bulbs, and place the growing pieces together again, carefully pegging down to the compost such pieces as have but few roots. If the kind of peat mentioned above be not at hand, good fibry bracken peat is the best substitute for it, but the fine particles of dust must be shaken out of it. Keep the plants well raised above the rim of the pots; shallow pans are preferable for the dwarf-growing species, and pots for the stronger ones. *Miltonias* thrive best in a shady part of the *Catleya* or intermediate-house, for if grown in too strong a light, the foliage becomes yellow, and falls prematurely. Very little water is needed until numerous roots are seen to be pushing out from the new growth. *Miltonia vexillaria* is now growing freely. This species should be supplied abundantly with water until growth is fully made up. On some plants the sphagnum-moss may not have grown well, and in such cases the dead moss should be pulled out, and living pieces pricked-in to the surface. During the present dull weather extra ventilation should be afforded, to prevent the young

leaves becoming spotted. Do not damp between the pots until the external air is drier and the weather brighter.

Temperatures.—For the benefit of new readers of the *Gardeners' Chronicle*, and for beginners in Orchid cultivation, I give the following temperatures to be maintained by fire-heat at this season of the year:—East Indian-house, 60° to 65°; *Catleya* or intermediate-house, 55° to 60°; the Mexican about 55°, and the *Odotoglossum* or cool-house 50°. The highest figures are for the night, and the lowest for early morning. During severe frosts or in very cold, windy weather, the temperatures may with safety be allowed to fall several degrees below the figures indicated, but it must be remembered that with a low temperature the atmosphere should be proportionately less moist.

THE FLOWER GARDEN.

By CHARLES HERRIS, Gardener, Droppore, Maidenhead.

General Remarks.—There is but little to attract in the flower garden at this season, nor will there be before the Snowdrop, our earliest flower, appears above the soil, which may soon occur if the weather continue as mild as at present. If the gardener should wish to transplant any clumps of these bulbs which may not have been possible at an earlier date because they could not be found, it may be safely done now, if the masses are not unduly divided up, and they are replanted at the same depth in the ground as that at which they had previously been. Where the walks in the pleasure-grounds are much over-shadowed by deciduous trees, they should be quickly cleared of the leaves, &c., for appearance sake, and to prevent the plants in the soil and first frost as possible. If a walk cannot be dry owing to accumulations of leaves on the surface, moss and weeds soon begin to spread, causing much labour and expense. After heavy rainfall following frost, the walks ought to be well rolled, which will have the effect of keeping them in good condition now, as well as throughout the summer.

Vacant flower-beds should be simply dug or trenched, according to the class of plant with which they will be filled in the summer. If *Pelargoniums* are to be planted in them, the soil must not be made very rich, otherwise fly-rot will predominate over flower. The *Calceolarias* prefer on the contrary, a rich, cool rooting medium, and the beds which will be filled with the latter should receive a moderate dressing of rotted manure, and be deeply dug, adding clayey loam if the staple be of a light or sandy nature. Beds in which sub-tropical foliage plants will be planted should also be well manured and trenched, as in most instances the stronger and quicker the growth of the plants, the greater their effectiveness. In heavy soils it is sometimes desirable to raise such beds above the general level, so as to obtain greater dryness, and consequently increased warmth at the roots, throwing out the soil to a depth of 2 feet, and raising a layer 1 foot or more in height of bricks, stones, &c., at the bottom of the bed, covering this with rods or half-dressed stable-dung.

THE HARDY FRUIT GARDEN.

By H. W. WARD, Rayleigh, Essex.

Thinning-out Branches and Removing Moss and Lichen.—Where the fruit trees have not received attention in these matters, no time should be lost in getting the operations out of hand. That these cultural operations have been sadly neglected in the past, and are still much neglected, there is ample evidence on every side, and more especially in the orchards of Hants, Wilts, Dorset, Somerset, Devon, and the counties adjoining. To this fact may be attributed the deficiency in quantity and quality of the fruits produced, and the consequent low prices realised. The *Gardeners' Chronicle* has done much in the past towards remedying this state of things, but there is still much for its Editor and contributors to accomplish in the way of converting comparatively barren orchards into fruitful and profitable ones. The first step to be taken in this direction, is in the case of crowded orchards, to cut down or grub up worthless and aged or worn-out trees; this done, to thin the crowded heads of the remaining trees, not doing it all at once, but extending the work over three or four years, cutting out so as to let light and consequently air into the heads, fattening the prunings, if free from insect faeces, for future use. Then scrape the moss and lichen off the trunks and main branches with pieces of bevelled-lath or hoop-iron, following this with a dressing of lime-wash into which a small quantity of fresh soap has been stirred, and may be applied

with a syringe, or if the trees are large ones, using the fruit-wall engine. If this be done on a calm day, much of the wash will adhere, destroying the remainder of the moss, &c., and the larvae of insects as well. The wash should be passed through a fine-meshed sieve before being used. In the case of short-stemmed and small trees and bushes, including those of the Gooseberry and Currant, lime and soot, or lime by itself in a powdered state, may be applied with good effect for destroying moss on the stems. Before dusting Gooseberry and Currant bushes, draw the soil back for a distance of 2 or 3 feet from the stems of the same, to enable the application to reach any insects or their larvae that may be lurking in the soil. This kind of preventive measure is best undertaken after the bushes have been pruned, in order to render the buds unattractive to the birds; and on this account too, it is prudent to defer the pruning of the Gooseberry until growth becomes visible, thereby affording the cultivator the opportunity of retaining those shoots which are the best furnished with fruit-buds.

Planting New Trees.—Approved varieties of Apples, Pears, and Plums, should be bought to take the place of the old ones, either to bring inferior or unproductive, have been or will be cleared away. The young trees should be planted in well-prepared holes, ranging in size from 18 to 24 inches in diameter and depth. If the soil be of a uniform good quality down to a depth of 3 feet, excavate it to the extent indicated, replacing the soil in inverted order to within about 1 foot of the ground-line, this being made concave shaped for the reception of the individual trees. Before planting, prune back all damaged or straggling roots with a sharp knife, spreading all roots radially over the surface, then cover with 6 inches of soil, and take the tree by the stem and shake it in an upward direction so as to let the soil trickle in among the roots in every part, and bring the soil to within about 6 inches of the surface after the remaining portion of excavated soil had been returned, and trdden slightly over the roots, if not too wet to do so. Should the highest water-level be likely to come within 18 or 24 inches of the surface at any time, the trees should be planted on small mounds, putting stones, bricks, bats, or clinkers at the bottom of the holes, and turf grey-side down over them to prevent the infiltration of the mould.

THE KITCHEN GARDEN.

By W. POPE, Gardener, Highclere Castle, Newbury.
Digging and Trenching.—The principal operations in the kitchen garden at this season consist in digging or trenching all vacant quarters, leaving the surface in the rough condition favourable to the action of frost. A good depth of soil is essential for the successful cultivation of vegetables, and an endeavour should be made to trench or back-draw a quarter every year, so that the entire kitchen garden will be treated in this manner once in four or five years. If the soil is good to a depth of 2½ to 3 feet, trenching may be carried out to that or any less depth, though it is not always desirable to bring very much of the subsoil to the surface at any time, as by so doing the land may be rendered unfitted for the reception of small seeds for a considerable length of time. If a shallow soil, its depth may be increased by breaking up the bottom of the trenches, and adding road-scrappings, decayed or charred vegetable refuse, quick-lime, cow-sheds, &c., to it. Back-draw trenching may be practised with advantage in most gardens, and being more quickly carried out than turf trenching, it is possible to operate upon a larger area each year. This simply consists in taking out a trench 1 spit deep and the shovellings 1 yard wide, in making a start, wheeling this to where it may be desired to finish, and breaking up the bottom of this trench deeply; then fill it up with the top spit, &c. of the next, and so on, over the entire piece of ground, adding the manure (which should have been previously placed on the ground) as the work proceeds. If the ground be intended for a crop of roots, the manure should be dug into the bottom, or placed on the freshly-broken subsoil; and for other crops it may be advisable to mix a portion of it with the top spit. Take advantage of frosty days to wheel-out manure on to the quarters, spreading it at once if hard frosts seem likely to continue, as without this kind of protection the ground may become too hard to dig.

The Ordering of Vegetable Seeds.—Seed catalogues now coming frequently to hand is a reminder that the gardener should make out and dispatch his list of requirements to the seedsman, and the earlier he does this the better. Only well-tried varieties should be depended upon for the main supplies, it being sufficient to add a few of the novelties each year for

trial. Most of the nursery and seedsmen in a large way of business sell collections of seed suitable for gardens of various sizes, which are wonderfully cheap and good, and are preferred by many to the trouble incurred by making a selection, the only drawback being that the buyer may get too much of one article, or perhaps some that are not wanted at all, to the exclusion of something else for which he has a greater need.

Hobeds are indispensable for the forcing of Radishes, Early Horn Carrots, Turnips, Potatoes, &c., either for planting in the open ground later on, or to grow to a usable size in the hotbed frames. There is no better time than the present month for making a start with most of such early crops, as sunlight is growing stronger, and the period during which the sun shines is lengthening. Commence by throwing together forthwith a heap of Oak or Beech leaves and fresh stable-manure, in the proportions of two parts of leaves to one of manure. Turn this once or twice in the heap before making up the bed, taking care to mix it thoroughly. In the meantime see that the frames, lights, &c., are cleaned and put in good order, in readiness for use.

FRUITS UNDER GLASS.

By F. HARRIS, Gardener, Easton Castle, Leithbury.
Vines.—The Vines in the early-house, if started early in November, should now be pushing into growth, and may with advantage be given a little warmer temperature, or 50° to 55°, upon cold nights, and higher when the weather is mild. During the day the temperature may be maintained by fire-heat at 65°. Discontinue to syringe heavily; a careful sprinkling at closing time on sunny days will be all that is necessary, providing the surfaces of the floors and borders are kept well damped, and a supply of weak manure-water is maintained in the evaporating-pans. This latter method will be found one of the very best preventives of red-spider. Do not secure shoots until they are well advanced, as they will gain more strength if allowed a little freedom during this dull season of the year. The commencement of the year is a good time to start Hamburghs to supply ripe fruit in July and August. If leaves and dung can be easily obtained, a bed of fermenting material may be made upon the border, and will prove very beneficial, besides rendering less firing necessary. The Grapes upon late Vines should have been removed before Christmas and bottled, if only to give the Vines a rest, for they will need to be quickly started again early in February. Aged Vines which have carried heavy crops of fruit should be afforded a good watering with liquid manure, especially those with borders inside. Give continued attention to the hotbed Grapes, and remove laid berries without delay. The bottles will also need to be kept filled with water.

Peaches and Nectarines.—Those who have to start their early house at the beginning of December or earlier, will now experience an anxious time, for the first month of the year is generally dull and sunless. Still, much can be done by a judicious use of fire-heat, and a constant circulation of air to cause the pollen upon the fast-opening flowers to gain sufficient buoyancy to effect fertilisation. A careful use of the camel-hair brush is almost indispensable in the case of trees forced thus early. If the borders are considered to be at all dry, a moderate watering with tepid water should be given to maintain a good set, and I fear bad setting is oftentimes the result of keeping the roots too dry at this, the critical time. Damp down the paths and borders after using the brush each day. The first week in January is a very convenient time at which to start Peach-trees, for before the flowers have opened we may expect better weather, and ripe fruits may be had from such trees at the end of May, or early in June. Give a little ventilation on all favourable opportunities, and make the most of the sun-heat available by closing early, and affording a light spraying with tepid-water at the same time. Continue the process of cleaning and tying, in later houses, if such work has not yet been completed. A little extra care in the cleansing of trees and houses now, will save much labour at a later period.

Figs.—In houses that were started on December 1, the tree will now be making signs of growth, and a little additional fire-heat may be afforded them with advantage. A temperature of 55° to 60° by night, with a corresponding rise by day, will be most suitable. No tree suffers sooner from drought than the Fig, and it is therefore imperative that the roots be kept sufficiently moist. In later houses, should it be thought that any of the roots have rambled from their proper quarters, though somewhat late the

matter may still be attended to. If vigorous measures are not adopted, there will be little fruit, but a rank and strong growth instead. It is better practice to keep Figs trees in check by judiciously lifting them occasionally and root-pruning them, than by pinching the shoots, for unless the latter is done very early, you run the risk of getting soft, weak, unripened growths that will not produce fruits. If the process of lifting be carried out, take care to relay the roots in poor fibrous labour, with plenty of broken bricks, soft sand and lime-rubble added, for Figs revel in such a compost, and richer food can better be given when watering after the fruit has commenced the final swelling.

PLANTS UNDER GLASS

By G. H. MAYCOCK, Gardener, Laton Hoo, Lido.
Seasonable Notes on Stove Plants.—At this period of the year it is necessary that the utmost care be exercised in affording water to stove plants, and to enable this to be done properly a knowledge of the requirements of each plant should be acquired. At this season Ixoras, Allamans, Stapeothais floribunda, Dipladenias, Clerodendron Balfouriana, which have been resting since the autumn, should be kept moderately dry until February, with some or all of them may be started into growth. A strict watch should be kept on plants of Dracaena and Croton, red-spider and thrips soon injuring their leaves. The smaller plants may be dipped overhead in a pailful of some safe and good insecticide, but it is better for the plants if they are not allowed to become badly infested so as to require dipping often than once a month. Should thrips abound, it will be advisable to vaporise the plants a few times with XU All, a valuable insect destroyer if used according to the directions accompanying each bottle.

Notes on Work in the Plant-houses.—No time should now be lost in finishing the propagation of Chrysanthemums for supplying large blooms. Place the cuttings singly in 2½-inch pots, placing these in one or two small light frames fixed on the side stages of a greenhouse. The frames should be partly filled with sawdust or Cocoa-turf fibre refuse, in which the pots are plugged up to the rim, by which proceeding a very small quantity of water is required by the cuttings, nearly every one of which will strike. Only root-stocks of any variety are very limited. Here we cultivate a thousand plants every year, and never have any difficulty in striking cuttings according to the method I describe. A low span-roofed greenhouse is perhaps more suitable than a lofty one, or a lean-to.

L'Am longiflora var. Harrisii intended to flower at the Easter season, should now be making a good growth, and the temperature of the intermediate house will suit them admirably. They should be kept near to the glass and guarded from aphides.

Freesias.—These bulbous plants if required to flower in the month of June should be started by forthwith potted up in good batches, using for the purpose 5-inch pots, and six bulbs in each. The best kind of soil for Freesias consists of loam, leaf-mould, in about equal parts, and sand sufficient to keep it open, using it when neither too wet nor too dry. Place in a cold frame, and afford no water before the roots become active. When the growths have reached 2 inches in height, the first batch may be placed in a warm house, and others may follow at intervals as may be required, thus keeping up a continuous supply of flowering plants in the above-mentioned months.

Geraniums.—These plants, if in spathe, should receive weak liquid manure-water once or twice a week if the pots are small, and it may consist of the drainings from the stables or cow-sheds which has been exposed to the air for 48 hours. If aphids should appear on any of the plants, fumigate the house forthwith, or the spathe will soon become discoloured.

The Show-house.—Attention should be given to the staking and tying of all plants in this structure, placing the plants as far apart as possible, so that overcrowding may be prevented, and the air circulate freely amongst them. Keep the foliage scrupulously clean and free from dust, fungus, &c.

Violets in Frames.—The generally mild character of the weather hitherto has suited these plants, air having been freely afforded. If foggy weather should set in, or hard frosts occur, rendering the airing of the plants less efficient, much care will be necessary in removing decaying leaves, and everything that favours decay and damp, giving air abundantly on bright days, and removing the lights altogether for an hour or two during the warmer part of the day. Plenty of manure or broken rubbish should be kept handy in the event of very sharp frost.

EDITORIAL NOTICES.

ADVERTISEMENTS should be sent to the PUBLISHER. Letters for Publication, as well as specimens and plants for naming, should be addressed to the EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be written on ONE SIDE ONLY OF THE PAPER, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith. The Editor does not undertake to pay for any contributions, or to return unused communications or illustrations, unless by special arrangement. Newspapers.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

APPOINTMENTS FOR JANUARY.

MEETINGS.

SATURDAY,	JAN. 2	Société Française d'Horticulture de Londres Meeting.
WEDNESDAY,	JAN. 6	East Coves Horticultural Improvement Society Meeting.
THURSDAY,	JAN. 7	Ayrshire Gardeners' Association.
SATURDAY,	JAN. 9	Royal Botanic Society's Meeting.
TUESDAY,	JAN. 12	Isle of Wight Horticultural Association's Meeting.
TUESDAY,	JAN. 12	Royal Horticultural Society's Committee.
WEDNESDAY,	JAN. 13	Renfrewshire Gardeners' Society's Meeting.
THURSDAY,	JAN. 14	Gardeners' Royal Benevolent Institution, Annual Meeting at Simpson's, Strand.
WEDNESDAY,	JAN. 20	Society of Jersey Gardeners' Meeting.
WEDNESDAY,	JAN. 20	Stockport Horticultural Society's Meeting.
THURSDAY,	JAN. 21	Linnean Society's Meeting.
SATURDAY,	JAN. 23	Royal Botanic Society's Meeting.
WEDNESDAY,	JAN. 27	Renfrewshire Gardeners' Society.

SALES FOR THE ENSUING WEEK.

MONDAY,	JAN. 4	700 lots of Bo der Plants, Bulbs, &c., at Stevens' Rooms.
TUESDAY,	JAN. 5	New and Rare Perennials, Roses, &c., at Protheroe & Morris' Rooms. High-class Poultry and Pigeons, Dogs, &c., at Stevens' Rooms.
WEDNESDAY,	JAN. 6	Japanese Lilies, Spiræas, Gladioli, Begonias, at Protheroe & Morris' Rooms. Roses, Fruit Trees, Shrubs, Bulbs, Lilies Palms, &c., at Stevens' Rooms.
THURSDAY,	JAN. 7	Carnations, Clematis, Paeonies, &c., at Protheroe & Morris' Rooms. 60 Cases of Arcaucasias as received, 150 cases of Japanese Lilioms, Geraniums, &c., at Stevens' Rooms.
FRIDAY,	JAN. 8	Orchids, at Protheroe & Morris' Rooms. Scientific and Photographic Apparatus, at Stevens' Rooms.

LONDON: Dec. 30.—Max., 52°; Min., 42°. Dec. 30.—Highest Temp., 53° N.E. England; Lowest, 44°, Shetland.
Corrected average Temperature for the ensuing week, deduced from observations of Forty-three years, at Chiswick.—36.4°.

A PEEP into the shop-windows of any of our large towns at the present season brings to mind the extent to which the kingdoms of Nature, and, perhaps, more especially the vegetable kingdom, are laid under contribution to supply not only the wants and necessities, but also the amusements and fancies of mankind. It also proves to us how is close our brotherhood with what geographically are far-off lands, but which steam and electricity have brought almost to our doors. No country on the face of the earth is too far removed from us at the present day to prevent it sending its natural products and manufactures into our markets—whether for good or otherwise is not a question for discussion at this season. Suffice it to say, that the demand each year seems to increase for these novelties. It must be confessed, however, that by far the largest increase in actual novelties in the English markets, is in manufactured articles, rather than in those of Nature's own production. Amongst food-products, it is true, that

our immense Australasian possessions have done much in quite recent times in adding to our fruit supplies, but these contributions have been chiefly confined to that well-known and always acceptable fruit, the Apple. The ever-welcome Orange is another illustration of increased supplies from new countries of production. It has recently been stated that during the present year as many as 3,000,000 cases of Oranges have been put on the English market, while forty years ago the average annual imports did not exceed 40,000 cases.

With the exception perhaps, of the Pine-apple and the Banana, which only a few years ago were too choice and costly for popular consumption, but both of which now find their way to the tables of nearly all classes, no fruit of tropical or warm climates has come to us as a marketable commodity. The Custard Apple, the Cherimoyer, and even the Mango, are not unknown in our shops, but their appearance is spasmodic, and to use a familiar term, they have not yet come to stay. As stated quite recently in a daily contemporary, efforts are being made to obtain some of these luxuries in a perfect state, and it is hoped that the West Indian Isles, who are going to make an attempt, notably Jamaica, may be able to transport their produce in such a manner as to cause many of the hitherto defects to disappear. We look in vain for fresh Lichis, which are amongst the most delicious morsels it is possible to conceive when in a perfectly ripe state, the pulp is then cool, slightly acid and refreshing, but still we do not find them in any other but the usual dried, somewhat shrivelled and blackened state.

Amongst the harder-fleshed fruits, and such as are not calculated to become very popular, even as a vegetable, may be observed at the present time, quantities of the Chocho, or Chow-Chow, as it is now generally called. This, as our readers will know, is the fruit of *Sesquium edule*, and is not really a novelty, as it has been seen in our markets in small quantities from time to time for many years; but at the present season the fruits appear to be more generally known, forming, as they do, part of the stock of most greengrocers even in local towns. With regard to Christmas adjuncts to the usual floral decorations, all the old favourites seem well to the fore, especially in the way of dried grasses. The vulgar artificial colouring is not so much in evidence, but when dyes are used they are more subdued and artistic, as in the case of the various shades of green. Again, with the "fairy flowers," those mysterious fluffy balls so ingeniously manipulated from the seed down of some *Asclepiad*. The colouring of these are, this year, mostly in good taste, the delicate shades of pink, amber, and subdued reds, when arranged with a little Feather-grass, have a very pretty effect; and they have, moreover, the advantage of being real and not artificial. In the matter of artificial flowers, however, a very great stride has been made, and we recently saw some *Chrysanthemum* flowers, and bunches of small Crab fruits, that almost defied detection, and these were intended for the adornment of ladies' hats.

In the matter of utilising vegetable products to the best advantage, the Japanese are very strongly in evidence just now, particularly in the matter of choice inlaid wood-work, for which these people are so noted. Trays and cabinets of all sizes in which choice Japanese woods are so dexterously placed side by side in the best manner to show off their beautiful markings, are amongst the most attractive objects of the

so-called fancy shops. The most charming of these woods is the "Keyaki" (*Zelkova acuminata*), better known, perhaps, as *Planera japonica*. The plant is closely allied to the Elms, but the wood is of exceptional beauty, the dark, irregular, wavy lines imparting to it quite an unique character. It is considered a very choice wood in Japan, and is much used for ornamental and choice cabinet-work.

A peculiar material for the ornamentation of trays is the bark of species of *Pterocarya*, probably *P. rhoifolia* and *P. sorbifolia*. The bark is apparently flattened, and cut in thin sheets, thus cutting through the several layers, and showing numerous concentric and irregular dark-brown markings on a lighter or chocolate-coloured ground. This bark is said to be used in the manufacture of small objects known as Nikko-wa.

In the matter of walking-sticks and umbrella-handles, a variety of novelties appears at this season of the year. While there is always in this connection a great demand for what are called "natural" sticks, that is, such as Hazel, Oak, Furze, &c., as against those that are cut out of the solid trunk, it is often found that the vagaries of fashion demand things that Nature fails directly to supply, hence art has to come in to assist. This is seen this year in the demand for natural sticks and canes of certain fashionable shades of colour. The tendency in all departments of ladies goods this season has been to fix on green, in consequence the handles of umbrellas and parasols have to be produced to suit the prevailing taste. Thus the partridge-cane which is furnished by an unknown Palm, and which in its natural state is a remarkably pretty stick, is this year required not so much to imitate the humble partridge as the more ambitious peacock or parrot. Canes of various kinds imported from the East have to a large extent taken the place of English sticks, as Oak, Hazel, &c. Bent handles in the natural woods have also given place to mounts of gold, silver, and various stones, the prevailing colour of which is green, while some of the choicest are even mounted with beautifully painted Dresden china, so that the keen search of a year or two ago for novelties in the way of natural roots or twisted branches is now no longer, for a time at least, prosecuted.

WISTARIA SINENSIS.—This hardy trailer was, we find, introduced from China so long ago as 1816; it is, therefore, an old acquaintance, but is there one that is more valued, or which has a greater title to our regard? Our present illustration (fig. 2, p. 7) is taken from a plant in the garden of F. LLOYD, Esq. (gr., Mr. M. E. MILLS), Coombe House, Croydon. The length of the wall is 30 yards, its height 10 feet. From these details the beauty of the picture may be conceived. At its base is a collection of low-growing herbaceous plants. The plant usually flowers from spurs, but it often produces a second crop of blooms on the terminal shoots of the year. Captain WELLSBANK has the credit of bringing it to England, where it was at first kept in a Peach-house at a temperature of 84°, to the great advantage of the red spider, but to the detriment of the plant. Then it was tried in a cool greenhouse, and at last it was found to be quite hardy! The fine plant at Chiswick is not, as is commonly said, one of the first imported, but it was raised (probably by layering) from the first plant introduced to the Rock's Nest, Godstone, by Captain WELLSBANK.

THE FORMATION OF A CHRYSANTHEMUM SOCIETY IN ABERDEEN.—A well-attended meeting of gardeners and amateurs was held in the Trades Buildings, Aberdeen, on Saturday evening, December 19, for the purpose of forming a Chrysanthemum Society for the city and north of Scotland.



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5 pints Peas, best varieties.	1 pkt. Cabbage for Spring sowing.	1 pkt. Lettuce, Cos.	1 oz. Spinach, Winter.
1 " Broad Beans.	1 " " " Autumn "	4 " " Cabbage.	2 pkts. Turnip, best for succession.
3/4 " Dwarf French Beans.	1 " " Savoy.	2 oz. Mustard.	1 " Tomato, fine variety.
1/2 " Scarlet Runners.	1 " Cauliflower, fine variety.	3 pkts. Onion, best kinds.	1 " Vegetable Marrow.
1 pkt. Beet, fine variety.	1 " Celery, fine variety.	1 " Leek, fine variety.	1 " Thyme.
1 " Borecole " "	1 oz. Cress, curled.	1 " Parsnip " "	1 " Summer Savory.
2 " Broccoli for succession.	1 " " plain.	2 oz. Radish, fine varieties.	1 " Parsley.
1 " Brussel Sprouts.	1 pkt. Endive, fine variety.	1 " Spinach, Summer.	

BARR'S 21/- COLLECTION OF VEGETABLE SEEDS FOR ONE YEAR'S SUPPLY.

14 pints Peas, best successional varieties.	1 pkt. Cabbage Savoy.	1 pkt. Endive.	1 pkt. Scorzonera.
4 " Broad Beans, best sorts.	2 1/2 oz. Carrot, best kinds.	2 " Lettuce, Cos.	2 oz. Spinach, Summer.
1 " Dwarf French Beans.	1 pkt. Celery, white.	1 " " Cabbage.	2 " " Winter.
1 " Scarlet Runners.	1 " " red.	1 " Leek.	3 " Turnip, best sorts.
1 pkt. Beet, fine variety.	1 " Cauliflower, fine variety.	1 " Melon.	1 pkt. Tomato, fine variety.
1 " Borecole.	2 oz. Cress, plain and curled.	4 oz. Mustard.	1 " Vegetable Marrow.
3 " Broccoli, best varieties.	1 " " golden or Australian.	4 pkts. Onion, best kinds.	1 " Thyme.
1 " Brussel Sprouts.	1 " " American or Winter.	1 oz. Parsnip, fine variety.	1 " Pot Marjoram.
2 " Cabbage for Spring sowing.	1 pkt. Cucumber, frame.	3 1/2 oz. Radish, for succession.	1 " Summer Savory.
1 " " " Autumn "	1 " " ridge.	1 pkt. Salsify.	1 " Parsley.
1 " Colewort, for bunch greens.			

BARR'S 42/- COLLECTION OF VEGETABLE SEEDS FOR ONE YEAR'S SUPPLY.

13 quarts Peas, 3 quarts Broad Beans, 3 pints Dwarf and Runner Beans, with other Vegetable Seeds in equally liberal proportion.

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20 quarts Peas, 5 quarts Broad Beans, 4 pints Dwarf and Runner Beans, with other Vegetable Seeds in equally liberal proportion.

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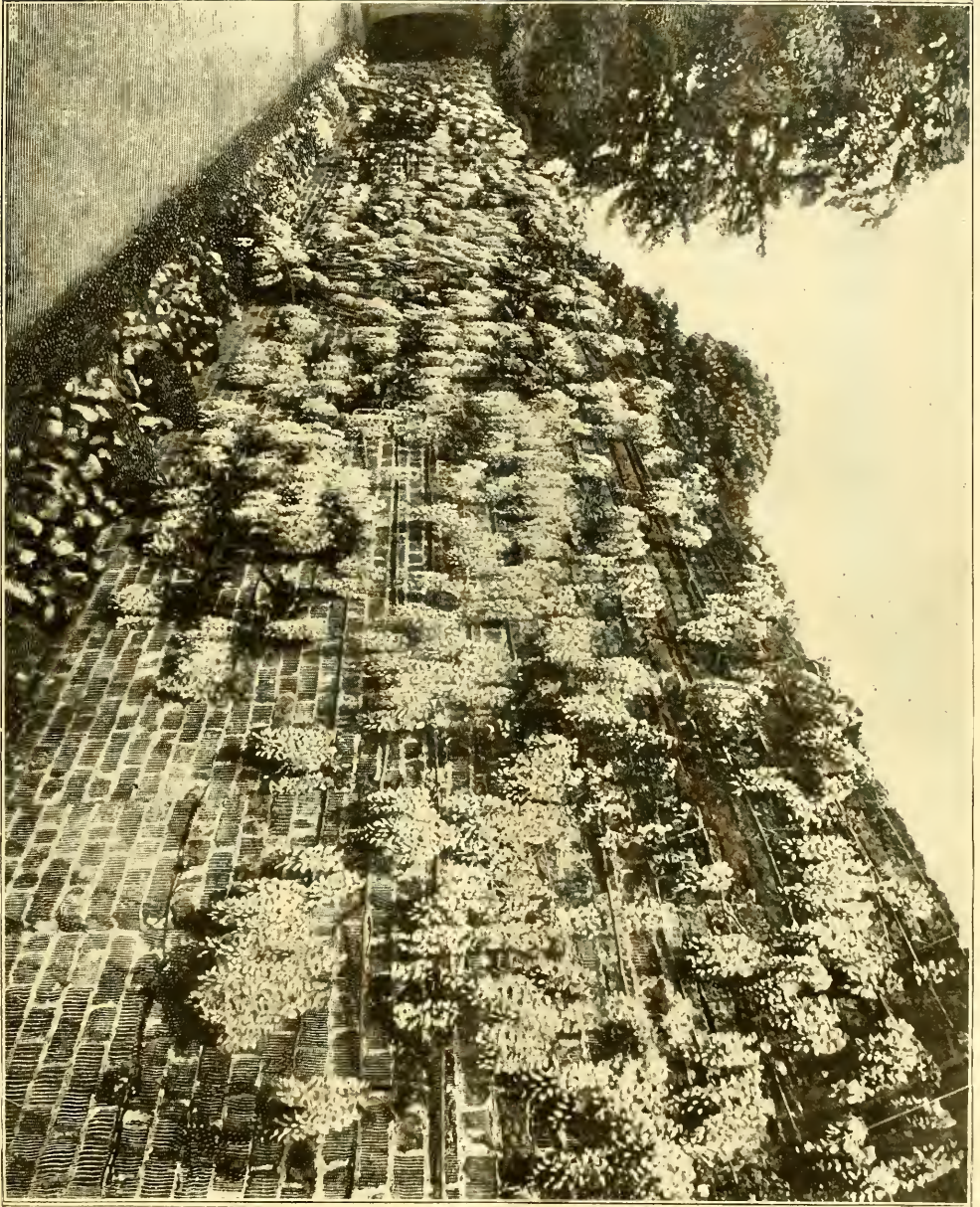


FIG. 2.—WISTERIA SINENSIS AT COCKLE IN THE GARDEN. (SEE P. 6.)

ROYAL HORTICULTURAL SOCIETY.—The following lectures have been arranged for the present year, and will be delivered at the Drill Hall:—

- March 9.—Professor Marshall Ward: "Microscopic Gardening."
- " 23.—Rev. G. Salmon: "Bud Transference, and its Effects on Fruit."
- April 13.—J. J. Willis: "Artificial Manures."
- " 27.—A. Dean: "Winter and Spring Bedding."
- May 11.—G. Maseue: "Diseases of Orchids."
- June 15.—Professor S. H. Vines: "Physiology of Plants."
- July 13.—Professor Henslow: "Mutual Accommodation between Plant Organs."
- " 27.—W. D. Drury: "Familiar Garden Insects—Friends and Foes."
- Aug. 10.—J. Douglas: "Cross-Fertilising Florists' Flowers."
- " 24.—A. H. Pearson: "Plums."
- Sept. 7.—H. J. Veitch: "Nepenthes."
- " 21.—J. Wright: "Horticultural Exhibitions."
- Oct. 12.—C. C. Hurst: "Orchid Hybrids."
- " 26.—H. Selfe Leonard: "Hardy Plant Borders."
- Nov. 9.—Professor F. W. Oliver: "Roots."
- " 23.—Professor Henslow: "Sporting in Chrysanthemums."

Meetings of the Society's committees will also be held on January 12, February 9, June 29, and December 14. The Temple Show will take place on May 26, 27, and 28; and the fruit show at the Crystal Palace on September 30, and October 1 and 2.

CHISWICK GARDENS.—A brief casual look round under the heavy haze of a London December fog sufficed to reveal that Mr. WRIGHT, the Chiswick Superintendent, has been utilising the open weather so far in getting a good deal of out-door work done, and next season will show to visitors some welcome changes. Amongst other things, very many comparatively worthless Apple and other fruit trees have disappeared, and the soil they occupied will be available for the extended conduct of useful vegetable and floral trials. It is pleasant to be sure, that the merely pecuniary aspects of the gardens seem to be now less regarded, although these are important, and that they seem likely to be made in the future even more useful for purely experimental purposes. The fine collection of Plums obtained by Mr. BARRON, have all been lifted and replanted in one block, and in alphabetical order, Archduke leading off. These trees, all of bush-form, should have exceeding interest for pomologists in a year or two. A couple of nurserymen having presented a large number of young Peach and Nectarine trees for pot culture, these are now in pots, and with some old ones, fill a couple of the old lean-to houses, hitherto devoted to useless plants. In the propagating houses is a large collection of Fellows' Gift plants, sprats to catch mackerels, for sending out in the spring. The new entrance conservatory is now complete structurally, but as a plant-house is worthless until heated, pity it is the money spent in its erection had not been devoted to the building of a couple more of good roomy houses that could have been available for trials.

JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY.—The part just issued contains full reports of the addresses delivered at Chester by Sir TREVOR LAWRENCE, Dean HOLE, and Mr. F. W. BURBIDGE. A full account of the Fruit Show at the Crystal Palace in October last is given, together with papers read on that occasion by Mr. E. J. BAILLIE, Mr. C. W. RADCLIFFE COOKE, Mr. JOHN WATKINS, and others. There are reports on various trials at Chiswick, from a very limited point of view, and therefore not adding much to our knowledge; almost the only useful information in the reports, is that in which mention is made of the one Potato and the three Tomatoes which gained unanimous awards.

COMING OF AGE, OF MR. GEO. HORSMAN.—A banquet in celebration of the coming of age of Mr. GEO. HORSMAN, eldest son of Mr. THOMAS HORSMAN, of Rosemont Nurseries, Ilkley, and of Bradford, Yorkshire, was given at the Lister's Arms Hotel,

Ilkley, on Saturday last, to which about ninety of the employees from Bradford, Frizinghall, and the Ilkley nurseries sat down, and some thirty additional guests participated in the later portion of the evening's programme.

"THE NEW GULLIVER; OR, TRAVELS IN ATHOMIA," by CHAS. T. DRURY, F.L.S., is a book whose object it is to bring home to the mind, in a humorous and amusing form, the manifold wonders of the world of Nature immediately around us, which, by their very familiarity, are apt to escape due appreciation. The Gulliver of these travels is benevolently endowed by the spirit of the age with the point of view of a Bluebottle, to the size of which he is suddenly reduced with that object. In this diminutive guise, and possessed (by virtue of his metamorphosis) of microscopic eyes and microphonic ears, plus the extra gift of a remarkable instrument, termed the Accelerator, he obtains a very fair insight into the marvels of earth, air, and water—all existent within the limits of his own little domain of house and grounds (Athomia). He furthermore experiences a series of most thrilling adventures and hair-breadth escapes amid the manifold forms of life encountered by him in his travels. The fifteen full-page illustrations depict a few of the most striking of these experiences; and the writer is much indebted to his friend, Mr. T. P. COLLINGS, for the admirable way in which the original rough pencil sketches embodying his ideas have been elaborated. The book is got up in a form particularly fitted for presentation to the budding naturalist of either sex.

NEWCASTLE AND DISTRICT HORTICULTURAL MUTUAL IMPROVEMENT SOCIETY.—The monthly meeting of this society was held at 25, Westgate Road, on Tuesday evening, December 22. Mr. BOLLOCK occupied the chair, and there was a good attendance of members. There was an excellent show of cut blooms on the table, including Chrysanthemums, by Mr. MORRAY, Oakwood, and Mr. LAWSON, gr. Heathdale, Gosforth. Mr. RUSSELL, nurseryman, Benthams, read an interesting paper entitled "An Edinburgh Nursery of the Past; and, a London Nursery of the Present." In the former part of his paper Mr. RUSSELL dealt especially with the once famous firm of PETER LAWSON & SONS, Edinburgh, about which he gave some very interesting particulars; discussion followed, in which many took part.

"NEW LIFE" DOUBLE PELARGONIUM.—The attractive little striped Pelargonium, exhibited by Messrs. CANNELL at the last meeting of the Royal Horticultural Society, owes its peculiarity to the substitution of white or striped petals for the stamens. Thus, in the first place, we have the green sepals with one nerve, and running out into a point; then the petals, obovate in form, that is, broad towards the free end, and tapering towards the base, the nerves being numerous and spreading. These petals are some of them wholly scarlet, others striped with scarlet. Within the true petals come the staminodes, or modified stamens, some pure white, others variously striped, as in a Carnation. In none of the flowers, so far as we have seen, although the pistil is fully formed, are the stamens perfect. In the hands of Mr. CANNELL there is no telling what it will come to.

THE NURSERY BUSINESS OF MESSRS. JAS. VEITCH & SONS.—We learn that, for family reasons, Messrs. JAMES VEITCH & SONS, of the Royal Exotic Nursery, Chelsea, have decided on converting their business into a private limited company, under the name of JAMES VEITCH & SONS, Limited. No part of the capital of the Company will be issued to the public, and the conversion will not affect the general conduct of the business, which will be carried on as heretofore under the direct superintendence and management of Mr. HARRY J. VEITCH and his two nephews, Mr. JAMES H. VEITCH and Mr. JOHN G. VEITCH, who will act as Directors of the Company.

ERNEST GUSTAVUS LODEMAN.—It is with great concern that we reproduce the following extract from *Garden and Forest*. Our acquaintances with Mr. LODEMAN was only scant, but we had formed a high idea of his capacity, and admired his book on "Spray-

ing" as a classic.—"ERNEST GUSTAVUS LODEMAN, Instructor in Horticulture in Cornell University, and Assistant Horticulturist to the Cornell Experiment Station, died by his own hand during an attack of acute melancholia, in Mexico, Oswego County, New York, on December 2. Mr. LODEMAN was born in Neufchatel, Switzerland, on May 3, 1867. When he was two years old his parents came to this country [United States], and in 1870 his father became Professor of Modern Languages in the State Normal School of Michigan, from which institution the son graduated in 1889. In 1890 he began in Cornell University the professional career which proved remarkably useful and fruitful. In 1895 he received the degree of Master of Science from the university, and his thesis, *The Spraying of Plants*, was subsequently published as one of Macmillan's Rural Science Series, making a book of some 400 pages. At the date of his untimely death he was a candidate for the degree of Doctor of Philosophy, having taken up for his thesis a philosophical and botanical study of the cultivated Begonias, and he had collected a greater number of species and type forms of the genus than exists in any other American collection. In the college he had particular charge of classes in the propagation of plants, spraying, greenhouse construction, and pomology. In connection with the experiment-station work he prepared many important bulletins, and the spray-calendar idea which originated with him is now an established type of publication. When the station was asked to extend its work directly among horticultural communities, Mr. LODEMAN threw himself enthusiastically into the work, and soon became a personal favourite among the fruit-growers of western New York. All the work upon Grapes and Strawberries, two large industries in the State, was entrusted to him, together with the treatment of certain plant diseases. His last journey made to Oswego County was to inspect experiments in fertilising Strawberry fields, and here, under some impulse induced by the strain of overwork, he met his tragic end. Personally, Mr. LODEMAN was tall and well built, and he usually enjoyed excellent health. He had the modesty and patience of the true student, and although at times he felt a depressing distrust of his own ability, he was prosperous and happy in his work. He was an excellent linguist, speaking French and German fluently, and having a useful knowledge of other languages. His private life was spotless, and he had a sweetness of temper and true manliness of character which endeared him to all with whom he came in contact."

THE SILVA OF NORTH AMERICA.—The tenth volume of Professor SARGENT'S *Silva of North America*, says *Garden and Forest*, published on the 28th of November. It contains figures and descriptions of the arborescent species of Yucca which grow north of the Mexican boundary, the arborescent Palms of the United States, the Cupressinæ and Taxaceæ, and the following genera of Coniferae—Juniperus, Cupressus (including Chamaecyparis), Thuja, Libocedrus, Sequoia and Taxodium. Two additional volumes will complete the work. The eleventh, now in course of preparation, will be devoted entirely to the genus Pinus, and in the twelfth and final volume will be described the Spruces, Firs, Hemlocks, Larches, and a few trees of earlier orders which have been found since the publication of this work was begun.

NEW SWISS HYBRID LAVATERA.—Should any of your readers, remarks Mr. W. E. GUMBLETON, not be acquainted with the colour and appearance of the two supposed parents of the above-named interesting natural hybrid, mentioned and partially described by M. MARC MICHEL on p. 764 of your last volume, it may interest them to learn that they can see coloured plates of *Lavatera trimestris* in the 4th vol. of the *Botanical Magazine*, No. 104, and of *L. maritima* in 10th vol. of VAN HOUTTE'S *Flore des Serres*, No. 1007. As this interesting new plant is a yet without a distinctive name, I would venture to suggest that it might be correctly and appropriately named *Lavatera cretiana* x, after the name of its owner's residence, Château du Crest.

PRESERVATION OF THE GIANT'S CAUSEWAY.

The National Footpath Preservation Society is making an urgent appeal for funds to defend the public right of access to the well-known Giant's Causeway, in Antrim. This marvellous natural formation has always been accessible to visitors, the numbers of whom are estimated to be now about 80,000 annually. Prompted by the modern commercial spirit, a company has lately been formed "for the purpose of enclosing the Causeway and making a profit out of it by charging a toll for admission." A defence association has also been formed, whose object it is to take legal proceedings to check, if possible, this enclosure of what is alleged to be public ground, and to establish the facts that the company claiming it is not exclusively entitled to the place, nor can restrain persons from trespassing thereon in future. All who are interested in the question of granting free public access to the more prominent marvels of Nature, are requested to forward a subscription to Sir W. McCAMMOND, Fort William Park, Belfast; or to HENRY ALLNUTT, Esq., 42, Essex Street, Strand, W.C.

EVOLUTION OF PRIMULA OBSCURA.—Messrs.

WILLIAMS & SON send us flowers of *Primula obscura*, which show very clearly the advance that is in progress in this species; and the "eye" of the flower is becoming more deeply coloured, the petals are becoming more deeply fringed at the edges, so that before long we shall have distinct types, groups, strains, variations, or whatever term be preferred, just as we have in the case of the Chinese Primrose. Mr. BAIN, gardener to Sir T. LAWRENCE, showed a similar series on Tuesday last; and now that attention is being drawn to the matter, we may expect many others. How is this variation brought about? Not by cross-fertilisation in this case; not by the action of the "environment," as Professor HENSLOW would probably assert, seeing that the conditions are practically identical, whilst the variations are—variable! Possibly by reversion; but of this we have no proof. It is obvious that we do not yet know the reason why, but that circumstance supplies all the greater incentive to collect fresh facts, and institute fresh experiments. We may never in our time penetrate into the heart of these mysteries, but every new fact gained is a help forward.

NEW PUBLICATIONS.—Führer für Pilzfreunde.

A guide to Fungus-lovers. Von EDMUND MICHAEL. (Zwickau): FÜRSTER & BORRIES. We call attention to this small volume, devoted to the illustration of the most frequently occurring edible, suspicious, and poisonous fungi, for the purpose of recommending it to beginners. The plates are excellent.

Programme de l'Exposition de la Société Royale d'Horticulture et d'Arboriculture à Bruges. The exhibition will be held in the Halles on April 11, April 12, and April 13, 1897, and monthly meetings in connection with them on the third Sunday of each month, from 11 to 1 o'clock, at 8, Rue des Aiguilles.

Price List of the Flower Show of the Cassipore Practical Institution of Horticulture, Floriculture, and Apiculture. This exhibition is to be held in the Seven-Taak Garden, Dum-Dum Road, on Feb. 5 and 9, and there will be twenty-five classes for exhibits of well-arranged groups of cut flowers; for vegetables, Roses, Camellias, Lilies, &c. A prize is offered for "a floral crown with floral characters of H.M.G. Majesty the Queen." This is to be competed for "by ladies only."

HOME CORRESPONDENCE.

MISLETO.—Mr. Druey's "Medicinal Mistletoe" (last vol. p. 787) may be the Cactaceous genus *Rhipsalis*, one or two species of which genus so closely resemble *Viscum* or *Phoradendron* in habit of growth and in fruit as to be quite capable of deceiving the elect even, unless they look at the plant very closely! As to our native *Viscum* (p. 785), the male and female plants differ much in habit and size of leaves. Male plants often have leaves 2 to 3 inches long and an inch in width; those of female plants are much smaller and narrower. F. W. Burbidge.

CARNATION SOUVENIR DE LA MALMAISON AT OSBERTON.—I was much struck last week at the unusual sight at this time of the year of 400 of these beautiful plants in bud and bloom, and from eight to ten blooms on a plant, with dark green curly foliage to the rim of the pot, with not the slightest sign of disease. They were about 2 feet high, about as much in diameter, and in perfect health. I noticed the flower-buds were well-tinned, only one flower on a shoot, and when I learned that they were the same plant I saw in bloom last July, I was much interested. They were then in 32-pots, with one bloom to a plant. I thought then they were the healthiest plants I ever saw. Unfortunately, at the time of my visit Mr. Crisp was absent, so I could not get any cultural details, but perhaps he will oblige if he should read this note, and amuse affluer information useful to many cultivators, amateurs and others. R. S., Nottingham.

THE VALUE OF ASHES AS MANURE.—In reply to the question of your correspondent, Mr. T. Fletcher in a recent issue, I may say that wood-ashes are doubtless a valuable mineral manure; indeed, so firm is the American farmers' faith in the value of ashes, that many persons have drawn from it the false inference that potash, which is the chief constituent of value in ashes, is not only the main thing, but the sole thing needful to fertilise the land, and to bring up those sections of the country which have been run out by careless cropping. But it is not fair to class wood-ashes as an exclusively potash-manure. Besides potash, wood-ashes contain 1 or 2 per cent. of phosphoric acid, and various other ingredients which are of value to plants, notably a little magnesia, and a great deal of carbonate of lime. The ashes of coal contain a trace only of potash, not much, if any more, than is found in ordinary loam, or than in many kinds of sand. Whatever merit pure coal-ashes may really possess must depend upon their mechanical condition—their fineness and freedom from cinders, which fits them to do good on clay soils, and on soils rich in humus, such as those garden soils, leaf-moulds, peaty soils, and those reclaimed from bogs. Of course, the value of ashes may vary considerably according to their source. They are richer or poorer in potash and other useful ingredients, according to the kinds of plants from which they are derived. The ashes of twigs or brush-wood will always be worth much more than the ashes of heart-wood taken from the middle of an old tree, and in general the smaller and younger the wood burned, the better will be the ashes. Consequently we find the composition of wood-ashes varying from 5 to 20 per cent. of potash. On the average, we may say that a bushel of ashes, weighing 48 lb., will contain 4 lb. of potash, and 1 lb. of phosphoric acid. Wood-ashes may be used with advantage to Vine-borders, and I have seen splendid crops of Carrots grown by their use; the soil, however, must not be deficient in nitrogen, therefore dung, or some other nitrogenous manure, must have been incorporated into the soil previously. Potato crops respond to a liberal dressing of ashes; as much as 100 bushels per acre may be used. Pasture-lands and lawns are benefited by an application of wood-ashes applied in the early spring months. Wood-ashes are best suited to light and loamy soils. Coal-ashes are best suited to heavy soils, or those containing an excess of vegetable matter, such as peaty or humus soils. J. J. Willis, Harpenden.

TOMATOS.—Mr. Wythes' article on the cultivation of this vegetable reminds me of the time when I tried to fruit the same Tomato plant several years in succession. I transplanted one plant in a narrow pit formed with bricks against the back wall of a Beach house, at the end of the house, training it up and along wires until it attained a length of 4 ft. I succeeded in resting the Tomato plant at the same time as I did the Peach trees, and managed this for two seasons, but after this it would not live and fruit for me any longer—I suppose it did not get sufficient care. However, it bore a good crop two summers, and a very pretty picture it made—so much so that people came long distances to see it. The variety was smooth fruited, but at the time I grew it I do not think it had a name. Joseph Meredith, Rosemount, Bishop's Cleeve, Staffs.

THE INTRODUCER OF LAPAGERIA ROSEA.—We have been lately furnished in *Carl. Chron.* with a good illustration of the manner in which mistakes are made, for on p. 657, last vol., Mr. F. W. Burbidge, writing in reference to the fruiting of *Lapageria rosea*, says he believes the plant in question was introduced by Thomas Lobb; then in the number for Dec. 19, Mr.

A. Outram states, without any element of doubt, that it was introduced by Thomas Lobb, which will doubtless be news to the House of Veitch, the employers of the two Lobbs—Thomas and William, for Messrs. Veitch, in their *Manual of Coniferæ*, p. 258, in the course of an exhaustive article on William Lobb, states that starting from England in 1845, he made his way to Southern Chile, and among his earliest introductions from that region were *Lapageria rosea*, *Escallonia macrantha*, *Embothrium coccineum*, *Philisia lyallii*, *Dioscorea spinoza*, and others. (Thomas Lobb, whose name has been by so prominently forwarded, was the means of introducing many plants from Eastern and South-eastern Asia, his name being perpetuated in *Aérides Lobbi*, *Eschynanthus Lobbi*, *Bolophyllum Lobbi*, *Cryptomeria Lobbi*, and *Selaginella Lobbi*, *Rusticæ*.)

GROS COLMAN AND GROS MAROC.—In the Royal Horticultural Schedule, these two varieties are bracketed together. A very good idea of the taste merits of the two varieties. The Royal Horticultural Society's Schedule reads thus:—Class No. 7, Grapes: Gros Colman or Gros Maroc, three bunches; these two Grapes were staged in the same class last September at the Crystal Palace Fruit Show, and Gros Maroc beat Gros Colman. The unsuccessful exhibitors who staged Gros Colman were disappointed, which has led to the present discussion in the *Gardeners' Chronicle*. At p. 539 of the *Gard. Chron.* for Nov. 14, Mr. Temple remarks upon the above. The idea of putting Gros Maroc before Gros Colman is a novel one—at least, to northern gardeners." Mr. Temple forgets that he was a judge at Edinburgh, and ought to have seen the Grapes there. And I am under the impression that he should pay closer attention to exhibitions at home before he criticises the Royal Horticultural Society's awards at the Crystal Palace. As I stated, Gros Maroc in the month of September is superior to Gros Colman, and as a proof of that statement, I draw Mr. Temple's attention to what has taken place within 50 miles of Carron Gardens, and that Gros Maroc was first against any other variety of black Grape in Edinburgh last September, beating Muscat Hamburg and Madresfield Court. This does not prove that Gros Maroc is superior to the two last-named varieties of Grapes, and my estimate of Gros Maroc is that it stands fourth on my list in point of quality against any other black Grape in the month of S-tember; but all judges cannot see alike, and differ as do the doctors. Why should not voting papers be sent to all successful cultivators of Grapes, and let us have black and white Grapes classed in their proper position by the votes given for each variety? We may also bracket the variety together which are considered synonymous, and cannot therefore be shown as distinct varieties. This would be a great advantage to many of the younger men, and a step, I think, in the right direction. A. Kirk, Northwood, Allon, N.B.

THE PROPOSED HORTICULTURAL INSTITUTE.—Mr. Jas. I. Wood, in his communication, tells us that "the need of a metropolitan horticultural institute has been recognised for years." For the sake of argument, we will admit this; indeed, it is but fair we should do so. It was recognised a few years ago, and it is well known that a special effort was made to supply this want. Baron Sir H. Schroder not only formulated a scheme, but backed it up with the promise of a magnificent donation, and induced his friends to subscribe in a more liberal manner than was ever known before in the annals of horticulture. The sum of £30,000 was required, and it came to the point that only the Fellowship of the Royal Horticultural Society would have subscribed an average of 45 each, the amount would have been raised. All felt the need, the scheme was formulated on paper, and though a few earnest horticulturists promised about £20,000, the general public refused to lend the remainder. A central site was available at that time, probably it is not so now; if it is, it can only be obtained at a very high ground rent. Most of us know what has been the result of previous efforts in this direction. In 1860 there was to be a union of all the sciences, including horticulture as the chief, at South Kensington. It was under the special patronage of the Queen and Prince Consort, also the Royal Horticultural Society. I attended the first opening show, and the last; but after the first sport was over, it was never a success, and, as is well known, the Royal Horticultural Society nearly came to grief over it. Failure is written over nearly all these large horticultural schemes opened with a great flourish of trumpets. I attended the opening show of the Alexander Palace

or Park, the Royal Aquarium also; the latter is central enough surely; it was to be a home of horticulture, and money seemed to be plentiful enough at first; but what is it now? The National Chrysanthemum Society have made it their home; and, so far as I know, this is the only trace of horticulture about it. Surely, Mr. Wood and his friends will not ignore the lessons to be learned from previous failures. I would be the last to throw cold water on any feasible scheme likely to benefit gardeners; but the whole thing is far too complex even to build upon. The "need" and the "opportunity" need not be discussed, but the "start" is very important. If a body of trustees is to be elected, it can only be from the leading horticulturists near London, all of them probably Fellows of the Royal Horticultural Society, and interested in the work of that Society, and all of them that would be likely to subscribe, having a full knowledge of the failure I have already alluded to. The second step, and the third step, is to solicit the aid of the Lord Mayor and of the Prince of Wales; they may render help, or they may not; but my own opinion is, that such help to horticulture has not been of any value in the long

pital courts, charity courts, sale of work, children's help societies; national festivals of the three patron saints of Scotland, Ireland, and Wales are to be held, but why St. George of England is left out in the national jubilation it is hard to say; but what has all this to do with a horticultural institute? The fact is, the scheme may be anything you like. An exhibition of matches, kid-gloves, millinery, or state carriages. It may be a picture gallery on a large or small scale, or a charity organisation society. These things are all very well in their way, but why they are linked with horticulture I cannot conceive. Mr. Wood says, "If we sink every other consideration and join hand in hand, the horticultural institute will surely be founded." "Hear! hear!" I say with all my heart, but let it be an institute that gardeners and lovers of gardens and flowers can support. What is really wanted is a building on a modest scale, not for large flower shows, but such a building as the Drill Hall of the London Scottish Volunteers in James Street, Westminster, with offices to carry on such work as is now done by the Royal Horticultural Society, a room for a library, &c.; but the catering for refreshments would be a

I can remember; they were procured from Messrs. Lucombe, Pince & Co., Exeter, and when sent out they cost 18s. 6d., each as grafted standards (not from the ground). They are doing nothing to in the way of pruning, and grow as they like, unless a branch should get a little out of place. The trees stand in an orchard, and grow very well; the ground is manured every year more or less, and liquid-manure from the farmyard is supplied as well. I do not know anything about wall-fruit cultivation, for if a tree will not grow in an orchard, it is of no use to me, and therefore my remarks are on that kind of culture. These trees are from 25 to 30 feet high, and about the same in diameter, and the stem is from 1 to 1½ foot in diameter. J. C.

CEDRUS DEODARA.—Your correspondent, Mr. Simpson, on p. 696, last vol., brings this tree before the notice of the readers of the *Gard. Chron.*, and wishes to know if anyone has ever heard of its failing as a plantation tree in this country? From what I have seen of its growth I am of opinion that in favoured situations it might make a timber-tree, but for it to do well the ground must be light and rich, with a dry sub-soil. The trees here, which were planted about forty years ago, have attained a height of 60 or more feet, with a girth of from 6 to 8 feet at 5 feet up the stem. They have grown larger than Limes that were planted at the same time, being both higher and thicker in the bole. Here, however, the trees cannot be said to be hardy, as they suffered much from the severe winter two years ago. A gentleman who resides in the village here, and who was in the East India Company's service, told me that shortly after the Deodara was introduced he was commissioned to procure 100 tons of seed, so sure were the nurserymen and others connected with forestry in this country of its becoming so popular as to supplant the Larch, Scots Fir, Norway Spruce, and other hardy Conifers, that the seed was sown largely. Of the millions of plants thus raised but few are to be found alive at the present time, and instead of them supplanting other forest trees, most of what remain are to be found as ornamental trees in parks and gardens, thus bearing out Mr. Nicholson's remarks that as a forest tree it is a failure. I know of none that have arrived at extraordinary dimensions, even on the best of ground. On shallow gravelly soil the tree makes but poor progress, and is often cut by frost. From what I have seen of *Abies Lowiana* I should say this was far better for timber planting. Trees of this latter that have only been planted twenty years are already taller than the Deodar. The Douglas Fir is so liable to have the points of its shoots eaten out by squirrels, which step its upward progress, otherwise it would make a grand forest tree. H. C. Prinsep.

CHRISTMAS TRADE IN FRUIT.—In your article on our Christmas supplies you state that the bulk of the fruit was foreign, which, of course, is quite correct as applied to Apples and Oranges, but I think it will be interesting to your readers to know that there were never so few foreign Grapes sold, most of the best shops not buying them at all; and whereas the Alcaerias used to be a staple article for Christmas trade, the English growers now give us a better article in such quantities as to make the better class consumer quite independent of the foreigner. My sales of English Grapes for the four days preceding Christmas were about 4000 baskets, weighing 22 tons, 9 cwt., 2 qr., 14 lb., the heaviest day being Tuesday, when we sold over 7 tons 13 cwt. And more than that, we are turning the tables on the foreigner by sending regularly to America, and almost daily to the Continent, both Cucumbers and Grapes. Geo. Monro, Covent Garden.

CYCLAMENS NOT OPENING THEIR FLOWERS.—That thrips, like green fly or any other insects attacking Cyclamens, must be detrimental to them goes without saying, but does not your correspondent, Mr. E. O. Orpet, in *Gard. Chron.*, Dec. 19, p. 759, attribute too much importance to their ravages? Cyclamens in perfect health are very little troubled with insect pests, but immediately they receive a check in their growth these little enemies appear, when it is at once assumed by many growers that the insects have caused the stunted growth, whereas it is the neglect of the plants which has encouraged the insects. Many think that the white grub or maggot that attacks the corn or bulb of the Cyclamen by boring holes into it is at the bottom of all the evil, whereas if the plants were in vigorous health there would be no grubs, as it feeds on the unhealthy or decaying turley only, and multiply thereon, in a similar manner to the *Eucharis mite*, which is never found upon bulbs which are in a healthy state, but as soon as the plant receives a check the dreaded mite appears and more



FIG. 3.—*LELIA FULVA* VAR. *ALBA* "E. ASHWORTH"; FLOWER PURE WHITE; BASE OF LIP YELLOW. (SEE P. 1.)

ruo. It is easy enough to make a grand opening ceremony, with the Lord Mayor, the Royal Horticultural Society, and 400 horticultural societies, with the Livery Companies to boot, if you can get them! With head-gardeners subscribing £25 and £12 10s. each, but how many gardeners would subscribe these sums for such a purpose? It is all very well to say, "United we stand, divided we fall," but how you are to unite such a conglomeration of interests as are defined at p. 762 of last vol. I cannot conceive. Horticultural Institute indeed! We are informed that "all interests will have a fair consideration." There are to be—refreshments by a "first-class caterer;" music, "only those of the highest class would be considered." "Picture-galleries and statuary," only the highest class, of course; exhibitions of appliances; high-class concerts and conversations. An indefinite number of courts to be set apart for all classes of trades. There some seventy-five city guilds or companies which might claim to be represented, and if they all subscribed they would have some right to representation. Mercers, Grocers, Drapers, Goldsmiths, Skioners, Merchant Tailors, Haberdashers, Ironmongers, Vintners, Clothworkers, &c. I suppose we must draw the line somewhere, and I would suggest Salters and Fishmongers, but they might not agree to it, as they are two of the twelve chief corporations of London. We come next to the hos-

failure, and is quite unnecessary in London. The Royal Horticultural Society is now doing a good work entirely in the interests of horticulture, and as such claims, and receives freely, aid in this work from ladies and gentlemen who can appreciate such work. It may be said that Mr. Wood's scheme is not intended to interfere with the work of the above society. This may be so, but it does not matter what people intend or say when they formulate such schemes, for it is quite certain that very few people would subscribe to two central societies; and many of the more thoughtful members and Fellows of the Royal Horticultural Society will pass before they give their money to anything in the nature of an opposition. For my part, I consider the whole thing as a flight of fancy, and altogether impossible to be worked for the benefit of horticulture. If the London livery companies liked to have such a building to display their insignias of office, or their work in gold and silver, well and good; but do not let it be called a horticultural institute. J. Douglas.

HUYSHÉ'S VICTORIA AND BERGAMOT PEARS are grown here as standards, and they are very prolific when the season is right for blooming and setting, that is, if there is a nice dry time at blooming—they are then generally well cropped. I bought them between thirty and forty years ago as nearly as

often remains until the bulbs are quite decayed. The more successfully plants are cultivated the less trouble will be found by insects attacking either the roots or foliage. *F. C. Edwards, Author of "Cyclamens and How to Grow Them."* [We fear that weevil-grubs at least are not very particular what they eat, and we have seen mites on the soundest and healthiest bulbs. E.D.]

NOTICES OF BOOKS.

ROUND THE YEAR: A SERIES OF SHORT NATURE-STUDIES. By Professor L. C. Miall, F.R.S. (London: Macmillan & Co.)

The subject-matter of this volume may be guessed from the title; it is, in fact, the journal of a naturalist, printed for the benefit of "observers (especially young observers) of out-of-door Nature, teachers of elementary science, and all who care for live natural history."

Professor Miall has this great advantage over many other writers of natural history notes—he is one who not merely thoroughly understands his subject, but, himself a thinker, would lead his readers also to consider the why and wherefore of such facts as they observe, and would have not to be content with merely knowing that leaves fall, buds open (and so on) at certain times.

As is to be expected in a book of this kind, the information is "scrappy" rather than connected in arrangement. Mention of a few of the subjects treated will give some idea of their variety. The chapters treat of such topics as White of Selborne, Snow-flakes, Birds in Mid-winter, the Great Frost of 1895, The Moon, Spring Crocuses, Catkins, Buds, Botany of a Railway Station, Midsummer Blooms, Hay-time, Love of Mountains, Reversed Spiral, &c.

For readers who are fond of natural history when presented to them in a palatable form, we can confidently recommend Professor Miall's book. They will find in it suggestions about everyday phenomena which perhaps never occurred to themselves; and, best of all, it will set them thinking on their own account. The writer's style is chatty, the language is simple when possible, and *Round the Year* may be pleasantly and profitably read in spare moments, or read aloud for the general benefit. The book has the additional advantage of being illustrated.

PURE SCIENCE IN THE BOTHY.*

At the last meeting of the British Association, Professor Vines expressed his belief "that the public usually made the mistake of supposing that botany is a single science," whereas, "on the contrary, it is an aggregate of sciences, each of which it is impossible for one man to fully pursue." If this is true of botany, it is yet more applicable to horticulture and agriculture, which are arts based upon science, and that a very many-sided science. We hope our younger gardeners, while not ceasing to be practical, will lose no opportunity of basing their practice upon science, especially vegetable physiology and morphology; but if they are to be encouraged to do so, we cannot help thinking that it will be better to proceed inductively by teaching them to observe, and then cautiously to generalise from observations, rather than to adopt what is essentially a dogmatic deductive method. The study of meteorology for practical men should, we think, begin with the construction, use, and general *modus operandi* of weather-cock, rain gauge, thermometers and barometer, and not with the nebular hypothesis, the inductibility of matter and the luminiferous ether. The latter is the method adopted by M. Léon Dumas, of Huy, in the present work, which, he states, is the result of twenty years' observations "à pleine nature." We do not doubt the observations, and, to our mind, the most valuable part of the work is the tables as to the

weather in Belgium; but unfortunately the facts are buried under an excessive amount of generalisation, some of which will, we imagine, not pass muster among professed meteorologists. It may, for example, be true, as is much insisted upon by M. Dumas, that the moon has considerable action on the weather, and that atmospheric tides are as important to the cultivator as those of the ocean to the boatman; but this has hardly as yet been demonstrated, nor is it within the range of practical science. Perhaps M. Dumas's work is intended for a class of highly-trained scientific cultivators that cannot be said to exist in this country, as we cannot otherwise perceive the utility of introducing at the present elementary stage of our knowledge a discussion of the Röntgen rays. The sixty-four "original" illustrations are very roughly lithographed blackboard diagrams; but then the price of the brochure is but three francs. It is divided into eight chapters, dealing respectively with our planet, the air, water, cold, heat, light, electricity, and weather forecasting, the last containing an interesting collection of French popular weather-lore rhymes. Under January appear the following:—

"En janvier pluie sans gelée
Prépare une bonne année."

"Jour de l'an beau
Mois d'aout chaud."

"Jours croissants
Froids cuisants."

M. Dumas happily characterises some of these adages as "*vérités banales*," and others, including most forecasts extending far ahead, as "*charlatanerie*," but some are truly "the wisdom of many and the wit of one."

NOTES FROM "COFFEELAND."

PERHAPS there are many who indulge in a cup of coffee who have very little knowledge of its cultivation, &c., from the seed sown to the mature bean as sold for consumption. Having lived on a coffee plantation, and also where coffee is "cured" and packed for the English markets, I thought it might interest your readers to know a little of the various processes.

The young plantation is laid out neatly and regularly in rectangular lines under "shade trees" which are most essential for the young plants' well-doing, guarding and protecting them from the stormy blast and scorching sun, and wind. The planting is done when the "monsoon bursts" in June. For the first three years the planter watches over and cares for these young plants, putting in fresh ones should any die off. The third year he is rewarded for all his labour and care by the "virgin crop," and if the "blossoming showers" which fall in April are propitious, we see a lovely sight when we get up one fine morning, just like a fresh fall of snow!—a vast sheet of pure white blossom, relieved by the glossy dark-green leaves, truly a sight worth seeing! The air is heavy with perfume, so strong that many people cannot endure it; but the perfume does not last long, for the flowers are very short lived, and the second day sees them discoloured and withering. When the flower falls off, you can notice small berries showing up; the rain and warm sun makes them swell and get larger and larger, till they become about the size of Cherries. This takes about seven or eight months, to November, and the berries, now a bright red, are ripe. All hands are now put on to pick, women and boys are considered the best for this work, and soon the "pulp-house" is a scene of life. The day is spent in picking—more picked, more money to be earned by the labourers. At the end of the day, they come trooping in a lively chattering set, with their baskets full of the crimson fruit; this is all measured up by the "maistry," or head man, the "dora" (master) superintending. It then goes through the process of pulping: a man takes his seat on the "cherry-loom," and through an aperture lays the berries gradually go pouring into the "pulper" below. In this way the outer red skin is taken off and thrown to one side, while the coffee runs

along wooden channels into large vats. After twenty-four hours' fermentation, it is washed, by coolies tramping and raking it, to remove the mucilage covering the bean. The "parchment," as the coffee is now called, is removed, and spread out on tables to dry. When partially dried, it is despatched in carts to the "curing-works" for final treatment. After being unloaded, it is spread out on the "barbecues" to thoroughly dry. It then goes to the "peeling-mill," to remove the dry, parchment-like skin; then it passes through the "fanners," "sizers," and "separators." The beans are delivered into boxes showing the different size of "flats" and "peas" (flat and round coffee). This completes the work done by machinery. Now the coffee goes to the "garbling-room," where it is measured out to women, a bushel to each. Every bean is handled, and all that are discoloured, broken, or faulty in any way, are thrown out, and go under the name of "Triage." The coffee is now ready for packing; this is done in double sacks, each one containing 1½ cwt. nett. The bags are branded with the estate's name, also the class of coffee. This is carted or railed to the nearest coast-port for shipment to Mining Lane, London, where it is sold by public auction. "*Peaberry*," *Mysore*.

SOCIETY.

THE POTATO TERCENTENARY.

(Continued from vol. xx., p. 768.)

THE DISEASES OF POTATOES.—Continuing his remarks, PROFESSOR JOHNSON said: We must now pass on to the second part of our subject—consideration of the Potato plant in a state of disease. One well recognised physiological distinction between a green plant and a fungus is this, that a green plant can make organic substances, such as starch, out of the inorganic substances, carbonic acid and water; that a fungus, having no chlorophyll or leaf green, cannot do this, but must obtain its starch-like calories made from living animals or plants (when the fungus acts as a parasite) from dead animals or plants, or parts of them (when the fungus acts as a saprophyte). The ordinary Potato fungus, *Phytophthora infestans*, is a parasite taking for the support of its own life the starch made by the Potato plant for itself. One of the most interesting features in Nature is the existence of the wonderful adaptation parasites, harmful as they are, show to enable them to live their lives as successfully and effectively as independent green plants do. The Potato fungus—*Phytophthora infestans*—lives itself, so to speak, in its host, the Potato plant, in the possession of an exceedingly rich and abundant supply of food ready to hand. Accordingly, it makes the simplest possible use of the production of fresh generations of itself. Let us follow out the story of the fungus's life by the help of the lantern slides. In our first slide we see a Potato leaf as attacked by the fungus. In such a leaf the fungus is present, and is sending delicate branching living threads in all directions, through the substance of the leaf, tapping the cells of the Potato leaf of their food, and, worse still, destroying the leaf green of these cells. In our next slide we have an illustration of these fungal threads at their destructive work. In a well diseased Potato plant these threads or mycelial hyphae, as they are botanically called, run through the substance of the leaves, the petiole and other parts of the haulms, down into the tubers, where they play havoc with the Potato plant's food stored there. The fungus is not content with this injury to its host. It says to itself, as it were, "the conditions here are very favourable, and as I cannot help myself here, I will arrange for more pests like myself." The fungus promptly sends out through the innumerable stomata from the under surface of the Potato leaf large numbers of delicate little threads (aerial hyphae) which branch and produce many microscopic little bodies or spore bags. Thus, on the under surface of a diseased Potato leaf there may be on a warm, wet summer's day hundreds of these spore bags.

In the innumerable spore cases (*gonangia*) are only very slightly attached when ripe, and fall off quite easily by wind or by contact with dogs, rabbits, men, or other animals moving amongst the diseased plants. When brushed off they fall either to the ground or upon other possibly healthy Potato plants, or they may be carried to these plants in the hair, &c., of the moving object. Should the air, &c., be quite dry, and continue so for some time, these spore cases will die, and will thus not help to spread the disease. If they come into contact with water, either as rain or dew, the story may be very different. The living contents of the spore cases usually divide into two or more small naked bodies (the zoospores), each furnished with two very delicate whip-like cilia called. When these bodies are formed, the case in which they are gets a hole in it and out come the little moving spores. If water is present their cilia begin to move rapidly, and the little body they move swims through the water on leaf or in the soil. Soon it comes to

* *Physique-Météorologique, Théories Nouvelles dérivées de l'Observation directe Applications intéressantes à l'Hygiène et à l'Agriculture.* Par Léon Dumas, Professeur des Sciences à l'École normale de Huy. (Huy, 1888: 8vo, pp. 216; 3 francs.)

rest, takes in its cilia, secretes a protecting wall round itself, and if in contact with the surface of the Potato plant, either underground tuber, or more generally the leaf, the spore sends out a little tube which passes into the leaf through the air pores, or by the help of a ferment it makes itself, bores its way through the surface of the leaf or tuber. This germ tube branches, and soon fungal elements are running on their destructive errand through the Potato plant in all directions. Some of the branches come out on the under surface of the Potato leaf, and give rise to the spore cases or zoospores, and our story is repeated not once, but many times. We have, in fact, what is a most abundant vegetative reproduction of the Potato fungus. Though the spore cases and the little moving spores soon die if the conditions for their life, such as presence of water, are absent, it cannot be too well remembered that the fungal elements in the zoospores, in the tubers, &c., do not die, but rest in the tuber during the winter, to germinate with the diseased tuber in the following spring, and to spread disease in the newly formed shoots—a fact which should be warning enough that diseased tubers should not be knowingly used as seed, and that diseased Potatoes ought to be burnt, or at least not either used as covering to Potatoes stored in pits or left to rot, or to be lightly dug into the ground as manure. There is one stage in the life of the Phytophthora infestans, the sexual stage, which is, so far as is known, absent. This apparent absence of the sexual stage of the Potato fungus, due to the absence of the food which the fungus parasite enjoys at the expense of its host, the Potato plant. The Potato fungus has become degraded by the easy conditions and material plenty of its life, and with this degradation has lost its sexual organs, unless Mr. Worthington Smith's disputed bodies are they.

SCAB.

I can only briefly refer to some of the other fungal diseases of Potatoes. Potato scab, indicated by rough, brown, spongy patches on the surface of the Potato tuber, and subsequent rotting, has been variously accounted for, on the one hand as due to a definite bacterium, and, on the other hand, to a fungus, *Oospora scabies*, and also to wounds caused by friction in the soil, naturally or otherwise. There are, no doubt, several kinds of scab not yet fully investigated. The United States Board of Agriculture recommends soaking for 12 hours in a dilute solution of corrosive sublimate as a cure for Potato scab.

DRY-ROTT, known since 1830, is a kind of after sickness appearing in tubers after they are gathered, and making them soft, shrivelled, and easily broken into pieces.

WE-ROTT, indicated by the pitted appearance of the tuber, is a bacterial disease of the Potato tuber, which still in the ground, and is due, according to most authorities, to a definite bacterium, though Bohm regards the cause as a physiological one, connected with interference of respiration in the tuber.

The diseases due to species of *FUSARIUM* to *MACROSPORIUM SOLANI* which attacks the leaves, perforating them and often causing them to fall off, I must not now stop to describe.

One genus, *SCLEROTIUM*, is represented as a parasite on the Potato by two species. The account of this sclerotium-forming genus I shall leave to Dr. M. W. HENRY, who has some interesting facts to place before you. I should, however, like to mention that Professor POTTER, whose illustrated paper on the subject appeared in this September's number of the *Journal of the Board of Agriculture*, has found, in investigating the cause of the "rotten" of Turnips and Swedes in stores, "that there is a disease which is common to Potatoes, Swedes, and Turnips; that the botrytis, or conical stage of this fungus, known as *Sclerotium fuckeliana*, is also found living upon decaying Potato haulms, upon Swedes and Turnip tops, and on decaying vegetable matter generally. Professor POTTER found that the conidia or minute germs from the decaying Potato haulms when sown upon sound Swedes produced exactly the same disease as was exhibited by the Swedes stored in the pits. POTTER thinks that the conidia from these sources may thus be the origin of infection for the Swedes and Turnips, and suggests that Potato haulms, Turnips and Swede tops, &c., should never be left to decay on the fields, but should be carefully collected and burnt as soon as possible, to prevent the production and liberation of the disease conidia.

We may take it as a generally accepted principle in biology that the possession of sexual organs is a sign of vigour in a plant possessing male and female organs, which result in the production of fruit and seeds, is more likely to maintain its tone than a plant which has no fruits or seeds and reproduces itself vegetatively, say by tubers, as is the case in the Potato plant. It is this repeated vegetative reproduction by tubers which is responsible for the persistence of that loss of the power of resistance to the fungus disease which the Champion variety of Potato showed when introduced into cultivation fifty years ago. The sugar cane industry might be quoted as a similar illustration of degeneration by repeated vegetative reproduction. Nature almost appears to be combining against the persistence of the Potato as a source of food supply for man—the constant tuberous propagation of the Potato plant has lowered its tone so much that it has become an easy prey to the Phytophthora; and this fungus has found itself in the presence of such a rich food supply that it has appeared to drop its sexual process of reproduction and developed a most abundant vegetative reproduction. Hence I think the greatest importance should be attached to Mr. BAKER's economic suggestion—That as the species *Solanum tuberosum* is the source of all the cultivated varieties of Potato and is itself a native of a relatively

dry and high habitat, while *Solanum maglia* yields readily an abundant supply of eatable Potatoes, and, as far as climate and Ireland than *Solanum tuberosum*, *Solanum maglia* and *Solanum Comersonii* should be brought into the economic arena and thoroughly tested as regards their economic value both as distinct types and when hybridised with it the innumerable forms of *Solanum tuberosum*."

STACHYS TUBERIFERA.

I should like, in conclusion, to call the attention of the Conference to a plant which has been suggested as a substitute for the Potato—a plant which is said to be finding its way into the garden in England, France, and Switzerland. It is a member of the dead nettle or labiate order to which Thymo, Mint, Sage, and other pot herbs belong. The plant, known as *Croesus* du Japon and Chinese Artichoke, is called *Stachys tuberifera*, and is characterised by the possession of tuberous underground stems which are swollen and head-like, owing to the accumulation of food matter in the internodes. The lantern slides, and the specimens which are grown in Ireland, will give a good idea of the characters of these peculiar-looking tubers. Their chemical composition is very interesting, and shows them to be a great advance in some respects as a food on the Potato tuber. Though in 100 parts by weight 73.3 parts are water, 2 parts are nitrogenous (i.e., eight times as much as in the Potato tuber), and 16.7 parts are a readily-digested carbohydrate known as galactan, a body which is much more digestible than starch, being allied to dextrin, and so more easily converted by the digestive juices into soluble dextrose or sugar. *Stachys* tubers are recommended by Planté, their analyser, as a substitute for Potatoes, especially for invalids or for people with a delicate stomach. The contents of *Stachys* tubers bear very much the same relation to the contents of a Potato tuber that peptonised feeds do to ordinary meals.

(To be continued.)



[The term "accumulated temperature" indicates the aggregate amount, as well as the duration, of degrees of temperature above or below 42° Fahr. for the period named; and this is denoted by the number in Day-degrees. "Day-degrees" signifying 1° continued for twenty-four hours, or any other number of degrees for an inversely proportional number of hours.]

DISTRICTS. Above (+) or below (-) the Mean for the week ending December 25.	TEMPERATURE.		RAINFALL.		BRIEST SUN. Percentage of possible duration for the week since Dec. 29, 1896.				
	ACCUMULATED. Above 42° for the Week.	Below 42° for the Week.	Above 42° or less (-) than Mean for the Week.	No. of Rainy Days since Dec. 29, 1896.					
00 aver	3	35	+ 161	- 245	4 + 247	54.6	12	23	
1	1	0	43	+ 74	- 162	+ 309	29.1	7	28
2	1	0	34	+ 122	- 160	+ 192	24.8	17	28
3	2	0	45	+ 61	- 121	+ 22	15.5	24	15
4	3	0	43	+ 41	- 110	+ 159	24.4	12	31
5	3	1	33	+ 150	- 162	+ 2	16.8	25	16
6	2	2	48	+ 148	- 127	+ 3	21.1	43.5	6
7	2	0	31	+ 207	- 139	+ 3	19.6	34.1	4
8	1	8	49	+ 212	- 83	+ 3	15.0	33.1	17
9	3	3	41	+ 152	- 110	+ 2	- 28.1	35.1	15
10	2	15	39	+ 216	- 91	+ 0	19.3	35.3	12
11	2	23	10	+ 315	- 104	+ 3	36.2	29.7	17

The districts indicated by number in the first column are the following:—
 0, Scotland N. Principal Wheat-producing Districts—1, Scotland, E.; 2, England, N.E.; 3, England, E.; 4, Midland Counties; 5, England, including London, S. Principal Cereals; 6, Scotland, W.; 7, England, N.W.; 8, England, S.W.; 9, Ireland, N.; 10, Ireland, S.; 11, Channel Islands.

THE PAST WEEK.

The following summary record of the weather throughout the British Islands for the week ending December 25, is furnished from the Meteorological Office:—

"The weather continued rather cold and dry during the earlier part of the week, but towards its close the conditions became mild and very changeable, and heavy rains alternated with intervals of bright and even cloudless weather.

"The temperature was again below the mean very generally, but just equalled it in Scotland, N. The deficit ran from 1° over the south western and north-eastern parts of Great Britain to 3° in Ireland, N. The highest of the maxima were recorded on the 25th, and varied from 58° in Scotland, E., and Ireland, S., to 51° in England, S. The lowest of the minima, which were registered during the earlier or middle part of the period, ranged from 31° in Scotland, E. (at Brecon on the 23rd), 33° in Scotland, N., 14° in Ireland, N., and 16° in Ireland, S., to 27° in England, S. and N.W., and to 30° in the Channel Islands." "The rainfall was rather in excess of the mean in most districts, but only just equalled it in the Midland Counties of England and Ireland, S., and was less than the normal in England, S., the Channel Islands, and Ireland, N." "The bright sunshine was deficient in nearly all districts, the percentage of the possible amount of duration ranging from 17 in Ireland, N.E. and S.W., and the Channel Islands, to 7 in Scotland, E., 6 in Scotland, W., and 1 in England, N.W."

MARKETS.

COVENT GARDEN, DECEMBER 31.

[We cannot accept any responsibility for the subjoined reports. They are furnished to us, regularly every Thursday, by the kindness of several of the principal salesmen, who revise the list, and who are responsible for the quotations. It must be remembered that these quotations do not represent any particular day, but only the general averages for the week preceding the date of our report. The prices depend upon the quality of the sample in the market, and upon the demand; and they may fluctuate, not only from day to day, but often several times in one day. En.]

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES. s. d. s. d.

Adiantum, per doz.	4 0-10 0	Ericas, hymalids,	per doz.	...	12 0-15 0
Aspidistras, per doz.	12 0-30 0	Ferns, small, doz.	...	1 0-2 0	
specimen, each	5 0-15 0	various, doz.	...	5 0-12 0	
Chrysanthemums,	per doz.	...	6 0-12 0		
Ficus elastica, each	1 0-7 6	Foliage plants, per doz.	...	12 0-36 0	
specimen plants,	per doz.	...	1 6-2 6		
Cinerarias, per doz.	9 0-12 0	Hyacinths, per doz.	6 0-12 0		
Cyclamens, per doz.	12 0-18 0	Marguerites, p. doz.	8 0-12 0		
Dracaenas, each	1 0-7 6	Palms, various, ea.	2 0-10 0		
various, p. doz.	12 0-25 0	specimens, ea.	10 0-24 0		
Evergreen Shrubs,	in variety, doz.	6 0-24 0	Solanums, p. doz.	12 0-15 0	
Ericas, per doz.	...	12 0-12 0	various, per doz.	...	6 0-9 0

CUT FLOWERS.—AVERAGE WHOLESALE PRICES. s. d. s. d.

Anem. cut. doz. bun.	1 6-2 6	Orchids—	s. d. s. d.
Arums, p. 12 blooms	4 0-6 0	Cattleya, 12 blms.	6 0-12 0
Bougainvilleas, per bn.	6 0-9 0	Gooselodgium crispum, 12 bn.	2 0-6 0
Carnations, per doz. blooms	...	Pelargoniums, scarlet, per 12 bunch.	4 0-8 0
Chrysanthemums, doz. bun.	4 0-9 0	per 12 sprays	0 0-9 0
cut. blooms	1 6-6 0	Polystichas, per doz.	...
Bougainvilleas, per dozen	2 6-4 0	Tulips, per doz.	6 0-12 0
Hyacinths (Roman), doz. sprays	...	Pyrotrums, 2 bn.	2 0-4 0
cut. sprays	1 0-1 6	Roses (French), per doz. blooms	...
Lilacs, wh. (French), per bunch	3 6-5 0	yellow (Maréchal), per doz.	0 0-9 0
Lilium Harris, per doz. blooms	5 0-9 0	pink, per doz.	3 0-4 0
Lily of the Valley, dozen sprays	1 0-2 0	Suifano, p. doz.	1 0-2 0
Maidenhair Fern, per 12 bunches	4 0-8 0	Tuberose, 12 blms.	6 0-1 0
Marigolds, per doz. bunches	2 0-4 0	Tulips, per doz.	6 0-5 0
Mignonette, per doz. bunches	4 0-6 0	Violets (Fr.) Farms, per bunch	3 6-4 0
Mimosa (French), per bunch	1 0-1 6	various, per bunch	2 0-3 0
Narcissus, various, per doz. bunches	1 6-3 0	(Eng.), per doz. bun.	1 6-2 6

ORCHID-BLOOM IN VASE.

FRUIT.—AVERAGE WHOLESALE PRICES. s. d. s. d.

Apples, Biscuits, per lb.	5 0-6 0	Grapes, Green Calcutta, 2nd qual., per lb.	...
Wellingtons, per sieve	5 0-6 0	Muscats, 2nd qual., per lb.	...
various kinds, per sieve	2 0-3 0	various kinds, per sieve	...
Grapes, Calcutta, per lb.	1 3-1 9	Nuts, Oak, per 100 lb.	...
Alcants, 2nd quality, per lb.	1 0-1 3	St. Michael's, each	...
Colman, selected, p. lb.	1 9-2 0		

VEGETABLES.—AVERAGE WHOLESALE PRICES. s. d. s. d.

Artichokes, Globe, per doz.	4 0-6 0	Cucumbers, home-grown, select, per doz.	...
Chinese (Stachys tuberifera), per lb.	0 3	Mushrooms (tudoor)	...
Beans, French, Channel Is., per lb.	1 6-1 9	Sea Kale, per punnet, 3/4 to 1 lb.	...
Madeira Kidney, per bkt. of 5 to 10 lbs.	2 6-3 0	Tomatoes, home-grown, per doz.	...
Carrots, per lb.	2 6-3 0	various, per doz.	...
Malé, per doz.	3 0-4 0	Canary Islands, per case, about 12 lb.	...
Cherbourg, per dozen	2 0-3 0		

POTATOES.

Since last report, trade has been at a standstill. J. R. Thomas.

SEEDS.

LONDON: Dec. 30.—Messrs. John Shaw & Sons, Seed Merchants, of Great Britain Place, Borough, London, S.E., write that, as is usual at the close of the year, there is for the moment no demand for farm seeds; nevertheless, values all round keep astonishingly firm. Fall prices are asked for perennial and Italian Vio-grasses. Sainfoin continues dear. There is no change in either Mustard or Rape-seed. Bird-seeds are neglected. Haricot Beans realise former terms. Wisconsin boiling Peas and Californian Butter-Beans show no alteration. The Linseed market is steady.

FRUIT AND VEGETABLES.

GLASGOW: December 30.—The following are the averages of the prices current during the past week:—Peas, 5d. per lb.; Apples, 1s. to 2s. per dozen; Tomatoes, Guernsey, 3d. per lb.; do., Scotch, 6d. do.; Grapes, home, 1s. to 2s. do., do., foreign, 4d. to 6d. do.; Turnips, white, 2s. to 2s. 6d. per doz. bunches; do., Swedes, 1s. per cwt.; Savoy, 1s. to 1s. 3d. per dozen; Cabbages, 6d. to 8d. do.; Kale do., 10d. to 1s. do.; Red do., 2s. 6d. to 3s. do.; Cauliflowers, Brynash, 2s. to 2s. 9d. per dozen; do., Dublin, 2s. to 2s. 6d. do.; Parsnips, 4s. to 4s. 6d. per cwt.; Herbs, assorted, 1d. to 2d. per bunch; Leeks, 1s. 3d. to 3s. 6d. per dozen bunches; Mint, 6d. per bunch; Onions, Dutch, ss. per bag; do., Portugal, 1s. per stone; do., Globe, 3s. to 3s. 9d. per cwt.; Parsley, 1s. to 6d. do.; Greens, Bunch, 3d. to 4d.; do., Celery, table, 1s. to 2s. 4d. rail; do., common, 9d. to 1s. do.; Potatos, best, 6d. per stone; Carrots, 2s. do., 4s. 6d. per cwt.; Broccoli, 3s. per dozen; Artichokes, 10s. to 13s. per cwt.; Cucumbers, 6s. to 12s. per dozen; Lettuces, 6d. to 9d. do.; do., French, 9d. to 1s. per dozen; Horseradish, 2s. to 2s. 6d. per bunch; Mushrooms, 1s. to 1s. 3d. per lb.; Broctrot, 6d. to 7d. per dozen; Cress, 3d. per basket; Brussels Sprouts, 1s. 3d. to 1s. 9d. per stone; Endive, 1s. 6d. to 2s. per dozen.

LIVERPOOL: December 30.—Averages of the prices current at the nomenclated markets during the past week:—North Hay: Turnips, 17s. 6d. to 18s. 6d. per ton. Potatos: Imperials, 1s. 8d. to 1s. 10d. per cwt.; Giants, 1s. 8d. to 2s. do.; Main Crop, 2s. to 2s. 6d. do.; Champions, 1s. 10d. to 2s. do.; Beuces, 2s. to 2s. 6d. do.; Turnips, 9d. to 8d. per 12 bunches; Swedes, 1s. 2d. to 1s. 4d. per cwt.; Carrots, 6d. to 8d. per 12 bunches; do., 2s. 6d. to 2s. 9d. per cwt.; Onions, English, 4s. to 4s. 6d. per cwt.; do., foreign, 2s. 6d. to 2s. 9d. do.; Parsley, 4d. to 6d. per 12 bunches; Cauliflowers, 1s. 6d. to 2s. 6d. per dozen; Cabbages, 6d. to 1s. 3d. do.; Celery, 8d. to 1s. 4d. do.; St. John's, Potatos, 8d. to 10d. per peck; Grapes, English, 2s. to 3s. per lb. do., foreign, 6d. to 8d. do.; Pines, English, 4s. to 5s. each; Ma-hrooms, 1s. 3d. per pound. Birkenhead.—Grapes, English, 2s. 6d. to 4s. per pound; do., foreign, 6d. to 8d. do.; Pines, foreign, 1s. 6d. to 2s. 6d. each.

CORN.

AVERAGE PRICES OF BRITISH CORN (per imperial qr.), for the week ending December 26, and for the corresponding period in 1895, together with the difference in the quotations. These figures are based on the Official Weekly Return:—

Table with 4 columns: Description, 1895, 1896, Difference. Rows include Wheat, Barley, and Oats.

TRADE NOTICE.

Mr. T. FLEDER is shortly about to resign his appointment as gardener and bailiff to the Rev. E. W. Northey, Woodcote, Epsom, to take over a dairy and poultry farm, which has been for some years successfully carried on by his father.

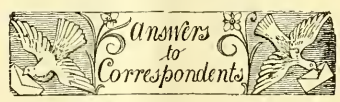
ENQUIRY.

"He that acquainteth much shall learn much."—Bacon.

WINTER ACQUAINTANCE IN PASTURE LAND.—"J. T." who possesses woodland that he is desirous of throwing into his park but which is overrun with Winter Aconite, would be glad to be informed if the foliage of this plant is injurious to stock?

WHAT OTHERS THINK OF US.—We take the following clipping from the Church Family Newspaper:—"By the way, I have been told, on good authority, that gardeners frequently ask distinguished personages to allow them to cul new plants after their names. The permission is readily given as a rule, but the custom amongst gardeners is to send a large parcel of the new plants to the noble lord or lady, with a bill amounting to something between

£15 and £20. Under these circumstances, the honour is often considered to be very dearly bought." A Church paper should, one would think, be careful not to make uncharitable assertions of this kind without substantiation. We have known a good deal about the nomenclature of plants, and been more or less concerned in it for many years, but we never heard of the "custom" that is here alleged to exist.



** The publication of a large number of communications is unavoidably postponed.

BOOKS: H. Anderson. The Book of the Rose, by the Rev. A. Foster-Melliar (Macmillan & Co., Loudon). There is a work on the culture of Cyclamen, entitled, Cyclamens, and How to Grow them, but we cannot say who are the publishers.—G. B. Aumont. There is no such book on the subject of parasitic plants as that you enquire about.

BOUQUARDS FOR MARKET: Bowardia. In bunches of twelve; but these must be good, or the dealers will put in twice as many sprays.

CHRYSANTHEMUMS FOR EXHIBITION: A. R. K. Your list contains many good varieties, but is remarkable for the omission of others that appear in almost every first-prize stand exhibited. You should add the following:—Madame Carrot, Mutual Friend, Australia, Viviani Morel, Chas. Davis, E. J. Moynoux, M. Pakoucke, M. Clément de Leobach, Jno. Strimpton, Sunflower, President Borel, Mille, J. de Gallien, Thos. Wilkins, Mrs. W. H. Lees, Reine d'Angleterre, Mdlle. Thérèse Rey, Mous, Geo. Biron, Etiole de Lyon, and M. Chas. Molin. The following from your list are not so safe:—Rita Schroeter, Pres. Armand, Mrs. Derwitt, Queen of the Buffs, Madame E. Frère, Mrs. Godfrey, R. Dean, Miss M. Bleunkron, and Miss E. Addison.

COLD STORAGE FOR GARDEN PRODUCE: Narseryman. You should communicate with the market authorities at Leadenhall and Smithfield Markets.

DEPTH OF STOCKHOLE: Inquisition. A very small rise from the top of the boiler to the flow-pipe is needed; indeed, we have had to do with boilers which did their work well when they were fixed on the same level as the pipes in the nearest house. or pit. The straighter the run and smoother the interior of the pipes, and fewer the angle-pieces and throttle-valves, the quicker the circulation. It is the ascent of the warmed water, by the flow-pipe and descent of that which is cool into the boiler at the lowest point which start and keep up the circulation in the apparatus, and the easier the rise is made for the heated water, the sooner is warmth experienced in the pipes.

GRUBS, &c., IN FERN-SPORE PANS: G. M. G. We are unable to name the creatures, unless you send specimens enclosed in damp sand or fne mould.

NAMES OF FRUITS: H. H. 23, Easter Breeze; 27, Haystack Bogranot; 23, Winter Nolis; 29, Vicar of Winkfield; 23, Bellissime d'Hiver.—W. H. Bewley. The fruits you send are not recognised by us—a good deal brewed.

NAMES OF PLANTS: Correspondents not answered in this issue are requested to be so good as to consult the following number.—A. Z. 1, Abies or Picea Hudsoni of gardens; it is supposed to be an alpine form of Abies balsamea; 2, Ligustrum sinense.—C. H. W. 1, Libonia Penrobsiensis x; 2, Lapageria rosea; 3, Cestrum (Hathroanthum) elegans; 4, cannot be named accurately without flowers; 5, Adiantum capillus-veneris; 6, Selaginella Martensii; 7, Dietyogramma japonica variegata; 8, Selaginella denticulata; 9, Cyrtomium caryotomoides; 10, Adiantum formosum; 11, Lactuca scariola variegata.—G. P. Wigton. 1, Epidendrum coelestinum; 2, Dendrobium primulinum.—J. C. Maxillaria lepidota.—C. K. 1, Eranthemum pulchellum; 2, Ruellia maritima.

RATINGS: X. In our last issue we inadvertently omitted to mention the name of the Market Gardeners, Nurserymen and Fumers' Association (Secretary, Mr. Bell, 32, King Street, Covent Garden), as having taken a leading part in the recent proceedings.

SEEDLING GRAPE FROM MUSCAT OF ALEXANDRIA AND GROS COLMAN: T. Bradshaw. Useful as a variety, but with no better flavour than Gros Colman. The berries are large, and the skin is sufficiently tough to make it a good keeper, the samples sent being plump. Being a "strong grower and free setter," it will doubtless find favour with those who are not sticklers for fine flavour in Grapes.

SHRUBS ON ROUGH GRASS-LAND THAT WILL NOT BE EATEN BY SHEEP: C. E. Common Juniper, Thorns in variety, including the Blackthorn; Cupressus, Nodocatales alba; Thuopsis borealis, the common Berberis, also B. aquifolium, clumps of Rhododendron ponticum, if the soil is not unsuitable, and you can fence them off with iron-burdles, the leaves having somewhat powerful effects on some animals when eaten; the same holds good of the Common Laurel, if planted on pasture-land. Common Spruce and Scots Fir, which can be kept at any desired height by topping the leader make capital pleasant covers.

STRAWBERRIES FOR MARKET.—Royal Sovereign, Sir Joseph Paxton, British Queen, Elton Pie, Earliest of All, Waterloo. The first four of good flavour, and the others early and prolific.

WIRE SUPPORTS FOR PEAS AND BEANS: W. S. As articles offering advantages to amateur cultivators residing in suburban districts, and those in which copious and woods are scarce, these wire supports are likely, if reasonable in price, to supply a want; but in large gardens in woodland districts, and in market gardens anywhere, owing to fast cost in the latter case, and the usually abundant supply of material in the former, they are less likely to be in demand.

COMMUNICATIONS RECEIVED.—Ed. Webb & Sons.—G. H. M.—S. O. B.—N. E. Br.—E. A. Paris.—W. P.—R. C. W.—F. A. W., Vermont.—J. W.—J. D. S., Baltimore.—Reere & Co.—H. A. B., New York.—L. De Sues.—H. S. W.—J. Mayne.—R. S.—W. K.—W. E. B., Grenada.—E. S., Nottingham.—W. H. D.—F. W. B.—T. F.—S. H. E. Meredith.—E. J.—J. Oberheld.—G. S. B.—J. H. C. S.—W. W.—H. H. M.—N. B.—T. H. S.—J. T.—C. W.—J. C.—Cristian.—J. C. H.—M. T.—J. O. B.—J. I.—N. C.—J. A.—J. D.—W. J. Botting.—Hemby.—J. L. (kindly send full address).—H. H.—A. C.—F.—G. W.—G. O.—Dobbie & Co.—A. Barker (see present issue).—G. K.—D.—R. G.—M.—G.—D. R.—W. Hill.—Wood & Ingram.—E. C.—F.—L.—G.—P.—H. E.—J. E.—W.—R.—P.—C. E.—W.—M.—A.—J. D.—Ward.—W. W.—M.—H.—de V.—E. B.—W.—P.—W.—E.—2.—G. P.—F. Kleinschell, Vicent.—R. H.—G. W.—E. B.—S.—C.—R. J. L.—G. H. E.—R.—P. E.—A.—H.

GARDENING APPROPRIATIONS.

Mr. A. L. KNIGHT, late of Albury Hall, Herts, as Head Gardener and Bailiff to H. ROLAND BROWN, Esq., Orchard Grove, Harrow Weald, Middlesex. Mr. G. CHILCOTT, for the past seven years the Orchid grower, Park Place Gardens, Henley-on-Thames, as Head Gardener to T. BENSKIS, Esq., Cleghorn, Harrow Weald, Middlesex. Mr. ALFRED WRIGHT, for a period of about fourteen years in the gardens, Bocking Place, Braintree, as Head Gardener to J. G. DEARDE, Esq., Walnut Hall, Stamford, Lincolnshire.

CATALOGUES RECEIVED.

KELWAY & SON, Langport, Somerset.—Wholesale List of Seeds. JAMES HEYDEN & SONS, Royal Exotic Nursery, King's Road, Chelsea.—(1) Seeds and Implements; (2) Chrysanthemums. LITTLE & BALLANTYNE, Carlisle.—Seeds, &c. T. MEYVEN & SONS, 15, Princes Street, Edinburgh.—Seed, &c. E. P. DIXON & SONS, Hull.—Seeds, &c. H. J. JONES, Ryerhoff Nursery—Hither Green, Lewisham.—Chrysanthemums. BROWN & WILSON, 10, Market Place, Manchester.—Seeds. MOSES, 1, Rue Saint Symphonien, Versailles.—General Nursery Stock. DICKSON, BROWN & TAIT, 43 and 45, Corporation Street, Manchester.—Seeds and Garden Requisites. DICKSON & ROBINSON, 12, Gd. Millgate, Manchester.—Seeds, &c. H. CANNELL & SONS, Swanley, Kent.—Chrysanthemums.

CONTINUED INCREASE IN THE CIRCULATION OF THE "GARDENERS' CHRONICLE."

IMPORTANT TO ADVERTISERS.—The Publisher has the satisfaction of announcing that the circulation of the "Gardeners' Chronicle" has since the reduction in the price of the paper, increased to the extent of more than 90 per cent., and that it continues to increase weekly. Advertisers are reminded that the "Chronicle" circulates among country gentlemen, and ALL CLASSES OF GARDENERS AND GARDEN-LOVERS at home, that it has a specially large ANDERSON AND COLONIAL CIRCULATION, and that it is prepared for reference in all the principal Libraries.



THE

Gardeners' Chronicle.

SATURDAY, JANUARY 9, 1897.

SIR JOSEPH BANKS.*

OF the many thousands, or perhaps one might say millions, of persons who have read the narrative of Cook's first voyage, few knew that it was a compilation, by an outsider, from the journals of various members of the expedition. This was so, however; and not till a century and a quarter had elapsed did the immortal navigator's own journal become accessible to the British public. In 1893, Rear-Admiral (then Captain) W. J. L. Wharton, Hydrographer of the Admiralty, edited Cook's journal, with annotations and a sketch of his life. Sir Joseph Hooker, who visited many of the same countries, with the same object, some seventy years later, has now given us Sir Joseph Banks's journal of that memorable voyage, in which he took part in the capacity of naturalist; and be it said, wholly at his own expense. Banks was a liberal promotor and patron of botany and horticulture, one of the original members of Council of the Horticultural Society of London, and the pioneer of botanical exploration in the southern hemisphere, so that some particulars of his share in the discoveries may be acceptable to readers of the *Gardeners' Chronicle*.

Cook's first voyage was accomplished in a bark of 370 tons, which left England with no fewer than ninety-four persons on board, and a small armament. The chief objects of the voyage were to observe a transit of Venus, and to discover new countries; both of which objects were highly successful. Otaheite (Tahiti), in the Society Islands, was Cook's destination to observe the transit. When Mr. Joseph Banks became aware of the intentions of the government, he applied to his friend, Lord Sandwich, then at the head of the Admiralty, for permission to join the expedition, and there is no doubt that the success and scientific results were largely due to his knowledge and indefatigable exertions. Banks was a wealthy man, and thus able to engage a competent staff of assistants and servants, and equip them thoroughly. His staff consisted of Dr. C. D. Solander, naturalist; J. Reynolds, S. Parkinson, and A. Buchan, artists; H. Sporing, clerk; J. Roberly, P. Briscoe, T. Richmond, and G. Dollin, servants, the two last, negroes. Those who know of the excessive hardships, privations and sickness attendant on long voyages in those days, will realise something of the character of Banks; and when we know that only three out of his staff of nine survived the voyage of less than three years' duration, we become more fully impressed with the serious nature of the undertaking, and the

sacrifice of ease and comfort made by those who voluntarily took part in it. The expedition left Plymouth in August, 1768, and after spending five days at Madeira, proceeded to Rio Janeiro, where it met with a hostile reception, not being permitted to land, though some of the gentlemen, Banks among others, did so clandestinely. Thus Banks had to lament the loss of an opportunity to collect in this marvellously rich tropical vegetation. From England outward they had employed their time in fishing, dredging, and shooting, and in the preparation, description, and naming of the specimens of animal and vegetable organisms thus obtained; yet few, if any, of them were ever published by the authors.

Botanising did not begin seriously till they reached Tierra del Fuego. Here they landed on Staten Island several times, and collected a number of plants, "all of which were new." A party of twelve, headed by Banks, attempted an excursion into the interior; but the difficulties they encountered were beyond all anticipations, and they were benighted, with disastrous results. The cold was intense, and they were wholly unprepared to pass the night in the open. What was worse, nearly all the members of the party were seized with almost unconquerable drowsiness, the effects of the extreme cold to which they were exposed. Had it not been for Banks's vigorous constitution and unremitting efforts, it is probable that the whole party would have perished. As it was, his two black servants were frozen to death, and several others only escaped the same fate through the persistence of their companions; even Dr. Solander could not be prevented from lying down in the snow to sleep. Eventually a fire was kindled, to which the weaker members were literally dragged by the stronger ones. All they had to eat was a vulture, killed on the way. This was skinned and divided in ten portions of about three mouthfuls each! During the night and far into the day there was a blinding snow, yet they reached the shore, though in a very exhausted condition, by 1 o'clock, having been more fortunate in their choice of r-road on their return than in going out. Subsequently further collections of plants were made, yet, strange to say, it fell to the lot of Sir Joseph Hooker to publish many of them more than half a century later in his *Flora Antarctica*. Banks specially mentions the anticorbatic plants, which were of great importance to them with their very limited dietary. The Beeches, too, attracted their attention, but one of them was mistaken for a Birch, even by the botanists, so that the colonists of New Zealand may be excused for calling their Beeches Birches. At the end of this part of the journal is a list of 104 phanerogamic and 41 cryptogamic plants collected in the region, but Sir Joseph Hooker has not reproduced it.

From Staten Island they sailed round Cape Horn away to Tahiti. This occupied nearly three months, and Banks recounts how they had successfully combated the dreaded scurvy by a liberal allowance of sauerkraut, pickled Cabbage, and Lime-juice. Four months were spent in the Society Islands, where our voyagers had, on the whole, a very agreeable time; and various interesting discoveries were made, but many of the rare and peculiar plants of the mountain valleys escaped their notice. Thence they sailed westward to New Zealand, making land in what Cook named Poverty Bay, in October, 1769. Although Cook was not the actual discoverer of New Zealand, it was practically unknown before, and on this occasion he circumnavigated the islands, spending six months in the operation. The naturalists, of course, were very busy, but although they landed in many places, they could not penetrate far into the interior. In spite of this drawback, they obtained 360 species of flowering plants and Ferns, almost all unknown to science. Most of the plants were drawn by Sydney Parkinson on the spot, and his drawings were engraved on copper after the return of the expedition to England. Dr. Solander drew up descriptions of the plants, but neither descriptions nor plates were ever published. A few of Solander's

names were taken up by other writers; but otherwise the many thousands of pounds spent by Banks were unfruitful, and most of their work was anticipated by Richard in his *Flora de La Nouvelle Zelande*, published in 1832.

Among the plants discovered in New Zealand was the handsome *Clinanthus punicus*, which was collected in Mercury Bay. It appears to have been rare in a wild state, even in those days, and now it is exceedingly rare, being confined to one or two small islands in the Merimiri river. They also discovered the only *Palma*, *Arcaea sapida*, native of New Zealand, and greatly enjoyed its "cabbage," or crown of undeveloped leaves. But what more impressed them was the variety and size of the trees, especially the Conifers, such as the Kauri Pine, *Dammara australis*, and *Podocarpus dactyloides*. *Knightsia excelsa*, one of the two Proteaceae that inhabit New Zealand, was "among the stately trees that particularly attracted the attention of our indefatigable naturalists." Banks mentions a tree of *Podocarpus dactyloides*, which girthed 19 feet 8 inches at 6 feet above the ground, and measured 89 feet to the first branch, tapering so little that Cook estimated that it contained 350 cubic feet of solid timber clear of the branches. In this connection I may add that Sir Joseph Hooker followed Banks in New Zealand some seventy years later, and made large collections of dried plants, which, with those made by Banks and Solander, formed the basis of his large illustrated *Flora*.

When Sir Joseph Hooker was there (in 1841 colonisation had hardly begun; now, fifty-five years later, the country is covered with farmsteads, which supply the Old Country with mutton, and dotted with ports and towns, numbering thousands of inhabitants.

On March 31 they left New Zealand, sailing north westward until they discovered the east coast of Australia, where they first landed in a bay, which they afterwards named Botany Bay, on April 28. With the exception of less than a dozen plants brought home in 1799 by Dampier (including, curiously enough, the only other species of *Clinanthus* (C Dampieri), absolutely nothing was known of the flora of Australia, so that here again Banks and Solander had a new field, and indeed not on a new field, but a flora so different from that of any other part of the world, as to cause astonishment and surprise. The first tree that attracted Banks's attention was a large one, a species of *Eucalyptus*, yielding a gum much like *sanguis draconis*. Subsequently several species were discovered, and Banks was correct in his conjecture that they belonged to the same genus as the gum tree described by Dampier. Banks also states that they met with vast numbers of a plant yielding a yellow gum, which from his description was evidently *Xanthorrhoea*, now called Grass-gum trees. Several myrmecophilous plants were observed, including a species of *Myrmecodia* or *Hydnophytum*; and it was noticed that the fruit of a Fig contained a number of species of *Cynips*, very like, if not exactly the same as *Cynips gymnoris* of Linnaeus. Two different *Palus* were met with, and the "cabbage" of both was used as a vegetable.

After leaving Botany Bay, they sailed northward, and narrowly escaped the total loss of their ship, which struck and grounded on a coral rock, which soon cut a hole in her bottom. Favoured by good weather and a numerous and willing crew, they succeeded in getting her into a river, where they repaired her. This was named after the ship, Endeavour River, which name it still bears. On this coast Banks found a great variety of drift-seeds and fruits, including a number of cocoa-nuts, which had been opened by a kind of crab. He does not mention having observed any Cocoa-nut trees on this coast, and Sir Joseph Hooker remarks in a foot note, "that the absence of this *Palm* on the coasts of Australia is one of the most singular facts in botanical geography." But although there is no doubt that it is exceedingly rare on this coast, it is recorded by Bentham (*Flora Australiensis*) from Keppel and Rookingham Bays, distant localities; and Mueller (*Genus of Australian Plants*) includes it as a native of Queensland. W. B. Belling Hemsley.

(To be continued.)

* *Journal of the Right Hon. Sir Joseph Banks, during Captain Cook's First Voyage in H.M.S. Endeavour, in 1769-71, to Tierra del Fuego, Otaheite, New Zealand, Australia, &c.* Edited by Sir Joseph D. Hooker.

NEW OR NOTEWORTHY PLANTS.

PLANTS FROM ASIA MINOR.

Eranthis cilicica.—*Eranthis hiemalis* is already well known as one of the earliest of spring-flowering plants. *Eranthis cilicica* is, however, much larger, and more beautiful. It is invaluable when planted in chalky loam among rocks and wood-chips. Fifteen to twenty tubers planted in 4-inch pots can be easily forced in a cool-house, and will bloom freely in February.

Galanthus Fosteri.—If bulbs of this species be planted in pots early in August, they will be ready to bloom in a cool-house at the beginning of November. This plant also prefers a chalky soil.

Sternbergia macrantha.—The well-known *Sternbergia lutea* is a graceful bulbous plant, which blooms in November or December. There was a plant about to flower in the open ground in the Berlin Botanic Garden on November 17, 1896. *Sternbergia macrantha* is also worthy of note. The sweet-smelling flowers, of a luminous yellow colour, are about 4 inches in diameter, and appear in October. The cut blooms remain fresh in water from three to four days.

Fritillaria aurea is a very pretty species, only 4 inches high, with golden-yellow flowers spotted with reddish-purple. It grows in a humus-rich loam.

Fritillaria Bornmuelleri is larger than *Fritillaria aurea*, and has larger golden-yellow flowers checked with reddish-purple.

Fritillaria Libanotica is a very beautiful species, resembling *Fritillaria persica*.

Fritillaria Sieberiana, *Hausknecht* (?), n. sp.—A very splendid new species, more than 1½ foot in height, with large flowers. It flourishes on chalky soil with leaf-mould (humus). The bracts (perianth-leaves) are bright green outside, streaked with reddish-purple, yellowish inside, and also marked with purple.

Iris Danfordii.—True specimens of this small yellow-flowered Iris, which has been figured in the *Botanical Magazine*, are very rarely found in the trade. Its importation is therefore particularly to be welcomed. This is also the case with the handsome Iris *Fuouia*. This tall species resembles *Iris florentina*. It has very large, pale blue flowers; the outer segments are of a rich deep blue-violet, veined with dark brown. The flowers have a delicate perfume. *The Botanical Gazette (Chicago, Ill.)*, November, 1896.

NOVELTIES OF 1896.

(Continued from p. 2.)

ORCHIDS.

NURSERYMEN.—Messrs. JAS. VEITCH & SONS, Royal Exotic Nursery, King's Road, Chelsea, maintain their place as *fuclie principes* among raisers of hybrid Orchids, and had the record of their year's work been solely the production of the charming white *Lælio-Cattleya* × *Decia* alba, the generally-admitted best hybrid Orchid of 1896, and the noble *L.-C.* Rosalind (Trianel ♀, Domini ♂) (*Gard. Chron.*, Jan. 2, fig. 1), for which they received a First-class Certificate at last meeting of the year, and which is a close second-best of the season, much would have been accomplished. But pursuing the consistent course which they have always adopted, Messrs. Veitch have brought out other fine water-flowering hybrids, some of the *L. Perrii* crosses, so well represented by their beautiful *Lælio-Cattleya* × *Lily* Rothschild, having proved great favourites. Among the best for which this firm have received certificates during 1896 are *Lælio-Cattleya* × *Doris* var. *Xantho*, an almost entirely orange-yellow flower; *L.-C.* × *Tiresias* (*C. Bowringiana* × *L.-C. elegans*), *L.-C.* × *Nysa* superba, a great advance on *L.-C.* × *exoniensis*; *Cattleya* × *Apollo* (Mossie ♀, Ackland ♂), of an entirely new section of hybrids; *Cattleya* × *Atlanta*, a noble plant, which has been previously shown, but only certificated as a First-class last year; *C.* × *Elvina* (Trianel × Schilleriana), and *C.* × *Euphrasia* (Warszewicz ♀, superba ♂), both very distinct novelties. Out of their importation of *Cattleya Schroderae*, Messrs. Veitch flowered three very fine new forms, viz., *C. Schroderae* aureo-rosea, *C. S. eximia*, and

C. S. caloglossa; and continuing the crossing of *Epidendrum Wallisii*, they evolved the beautiful *E.* × *Endresio-Wallisii* superbum and *E.* × *elegantulum* (Wallisii ♀ × *Endresio-Wallisii*), both charming, compact, and floriferous kinds. Of their new *Cypripediums*, *C.* × *Baron Schroder* (*seamanthum superbum* × *Fairriemum*) is by far the best, and will be difficult to surpass in its section; *C.* × *Regina* (× *Leeanum* × *Fairriemum*), a fine representation of the *C.* × *Arthuriatum* class; *C.* × *Euryades* (× *Leeanum* × *Boxalli*), handsome and very variable, one form certificated having a heavily blotched white dorsal sepal, while the other had the same feature of a purplish-chocolate, with white tip. *Selepepidium* × *Schroderae* var. *candidulum*, is a fine white form tinged with light rose. *Masdevallia Ajax* (M. Chelsoni × M. Peristeria), a worthy production, with rich red, yellow, and brown flowers. *Phaiocalanthe* × *Seleni* albiflora, deemed worthy of a First-class Certificate; and *Chlysis* × *Langleyensis* (× *C. Chelsoni* × *C. bractescens*), a fine white flower, with the segments tipped with rose, like a large form of *C. Limnighitii*.

Messrs. F. SANDER & Co. excel in hybrid *Cypripediums*, and from their stove-houses at St. Albans, among other novelties which flowered in 1896, come *C. Minnie Ames* (Curtisii × concolor), *C. Henri van der Straeten* (× *Mrs. C. Canham* × *Leeanum*), *C. A. R. Smith* (callosum × Druryi), *C. Rothwellianum* (Argus × Stonei), *C. Fairy Queen* (Curtisii × Druryi), *C. McNabianum* (callosum × concolor), *C. Neptune* (lo grande × Rothschildianum), *C. Lathamianum* albescens (Spicerianum magnificum × villosum aureum), *C. Grovesianum* (Lathamianum × Leeanum), *C. Lady Wimborne* (villosum × Leeanum giganteum), *C. Mrs. C. Maynard* (nitens var. × Boxalli), *C. Saturn* (villosum × Leeanum Mosereelianum), *C. excolsiar* var. *Mars* (Harrisianum × Rothschildianum), and *Selepepidium Uranus* (Lindleyanum × grande).

Of other hybrids remarkable are *Calanthe Novelty* (veratrifolia × Conkoni), the first break between the evergreen and the deciduous species. *Dendrobium Curtisii* (× *Cassiope* × *anreum*); *Phaius Ashworthianus* (Manni × maculatus), and *Lælio-Cattleya Mardeli* var. *Fascinator*.

Of imported species and varieties the *Lælia purpurata* "Distinction," *L. p.* albo violaceum; *Cattleya Mossie* "Her Majesty," *C. Mendelii* "Countess of Derby," and *Miltonia* vexillaria leucoglossa, which secured awards at the last great show at Manchester, are all superb flowers; and *Mormodes badium* and *Bulbophyllum Ericssonii*, flowered for the first time in 1896, showing them to be remarkable introductions. Other good novelties of Messrs. F. Sander & Co. are *Spathoglottis plicata* Micholitzii, *Sobralia Brandlie*, *Cattleya Percivaliana* amena, *Oncidium Godseffianum*, *Cattleya labiata* The Pearl, *C. l.* The Bride, *C. l.* Puritana, and *C. l.* Baron Schroder, all nearly white varieties. During the year also the firm have reintroduced *Cypripedium Mastersianum*, *Angulana uniflora* var. *Turveri*, *Maxillaria striata*, and imported number of pretty botanical species.

Messrs. HUGH LOW & Co. have by their credit the phenomenal *Cypripedium* Charlesworthii Lowi, the finest Charlesworthii yet seen; the magnificent *Cattleya Mossie Arnoldiana*, Low's var., which secured one of the four First-class Certificates awarded at the last Temple Show; the scarcely less beautiful *Odotoglossum crispum* Lowie, exhibited on the same occasion; and the richly-coloured *Cattleya Mossie Brilliance*.

Of continental productions, Messrs. LINDEN, l'Horticulture Internationale, Parc Leopold, Brussels, take the lead with *Cattleya The Czar*, the best natural hybrid imported during the year; *Odotoglossum crispum* var. *augustum*, a noble flower, which was so much admired, and gained a First-class Certificate at the last great Temple show (*Gard. Chron.*, May 28, p. 649). From their fine importations of *Odotoglossums* also some very handsome natural hybrids, indicating new ground, have been exhibited both at Brussels and London, and many of them figured in the *Lindena*. Of them the best were *O. crispum* var. *meleagris*, *O. c. citratum*, *O. c. Calos*, *O. spectabile*, *O. ×*

rubiginosum, *O. × Trojanowskianum*, *O. × Wilkeanum* var. *rufum*, *O. × W. var. olivare*, *O. × W. var. elongatum*, and *O. × W. var. fuscum*. Attempt has been made to classify these singular and handsome variations, some of which range closely to *O. × excelles*, but have features differing from the ordinary types. Messrs. Linden also produced in 1896 the handsome *Lælio-Cattleya* × *Wargynava*, *L.-C.* × *Schulzeana*, *Cattleya* × *Mathosio*, and a number of splendid and distinct varieties of *Cattleya Mossie*, *Catasium* × *epledens*, and other things which are duly illustrated in the *Lindena*; also *Acanthophippium Mantii*, *Cypripedium Lebanyanum*, *Coleogyne lurida*, and many others of considerable interest.

Mr. PEETERS, of Brussels, at the meeting of the Royal Horticultural Society on March 10, 1896, brought before the notice of the Orchid Committee the fine hybrid *Zygopetalum Perrenodi*, and *Miltonia Eleuana aurea*, both of which secured awards.

M. JULES HYE-LEYSEN, of Ghent, that adept at Orchid culture, staged at the Temple Show the large and handsome *Miltonia vexillaria Coentia*, and some good *Odotoglossums*. M. P. WALTER, of Magdeburg, Wilhelm-stadt, flowered the new white *Acanthophippium obrucum*; M. ZOLLNER-JENNY, of Zurich, the remarkable *Dendrobium Jenuyanum*; M. MARON, gardenier to M. Fournier, of Marseilles, *Lælio-Cattleya* × *velutino-elegans*, and other worthy hybrids; M. BARBEY, of Geneva, *Epidendrum Earboryi* and *Saccolabium Barbeyi*; and 1 others have also contributed.

From this hurried review it will be seen that although the gains in Orchids to gardeners during the past year have been satisfactory, the result has been secured by the patient productions of small quantities of good things rather than by large importations.

Among the new or rare Orchids illustrated in the *Gardeners' Chronicle* in 1896, are *Angulana uniflora* var. *Turveri*, April 4, p. 123; *Cattleya Le Czar*, Nov. 14, p. 539; *Dau-brouhin Arachutis*, July 4, p. 7; *D. cymbidioides*, May 9, p. 531; *D. × Wigandia*, May 2, p. 553; *D. Sul pulchra*, Dec. 26, p. 785; *Epidendrum × elegantulum*, March 21, p. 361; *Houlletia Lowiana*, Dec. 12, p. 716; *Lælia purpurata* var. *Ashworthiana*, July 11, p. 39; *Masdevallia* - *Shantryan*, *Chamburlain's* var., Feb. 29, p. 262; *Maxillaria striata*, Nov. 21, p. 631; *Odotoglossum crispum* *augustum*, May 23, p. 649; *O. c. Ashworthianum*, Feb. 15, p. 197; *Sophr-Cattleya* × *Calypso*, Dec. 5, p. 695; *Zygopetalum* × *Perrenodi*, March 21, p. 367.

STOVE AND GREENHOUSE PLANTS.

As usual, when reviewing the gains to gardeners during the past year, the events which most readily present themselves to the mind, and which were at the time considered the most interesting, are connected with well-known plants flowering for the first time, and with re-introductions. Such were the two remarkable examples of the long-looked-for *Canoecia maxima* in certain gardens in 1896. A flowering spray, and details of a flower being given, together with remarks on the unique occurrence, in these pages on Nov. 14, p. 596, and other issues. The florists' *Primulas* of Messrs. Sutton & Sons, Cannel & Sons, Carter & Co., and other great raisers, seem to have attained the highest point of excellence as florists' flowers, and the introduction of the true species will afford an opportunity to hybridists to commence, *de novo*, on other lines than those which florists are apt to mostly affect, a start having been already made by Mr. Hyde by crossing *P. smensis* and *P. obconica*, and raising the seedlings and flowering them. What Messrs. Sutton have been able to effect is not yet made public.

Sir Trevor Lawrence, Bart., who takes an especial interest in raising new *Anthuriums*, exhibited a goodly number of varieties at the meetings of the Royal Horticultural Society early in the year, the best of those which received awards being *A. Lawrenconum*, the finest large white; *A. Rothschildianum* elegans, rose-colour, spotted and flaked with scarlet; *A. Rothschildianum maximum*, a noble spathe with white ground, spotted and marbled with crimson;

and *A. pumilum*, a dwarf and profuse variety with scarlet spathes, splashed with crimson. Other good flowers of this class from Burford were *Bertonia Leopold II.*, a profuse bloomer, and with very pretty leaves; *Begonia odorata rosea* and *Canna Roi des Rouges*, both of which may be available as decorative plants in the summer flower-garden.

Messrs. Jas. Veitch & Sons, of the Royal Exotic

of a very pretty species, hitherto very rare, figured in *Gardeners' Chronicle*, October 3, 1896, p. 393. In their fine exhibit of about 180 kinds of Cacti at the Temple Show, some handsome, distinct, and charmingly tinted *Phyllocacti* were selected for awards, viz., *P. Ena*, *P. Ovis*, *P. elatior*, *P. Eurasian*, and *P. Venus*; and on the same occasion, among their Certificated *Caladiums*, were *C. Silver Cloud*, silvery-

scarlet flowers; *R. Cloth of Gold*, a fine pale yellow, and *R. nobiliss*, clear fawn-yellow, are new and distinct. The *Streptocarpus* have been improved by new crosses, and these favourite flowers are fast settling down among florists' flowers of the herbaceous class, and they are far easier to grow and more remunerative in the matter of bloom than most of such plants. Other novelties Certificated to Messrs. Veitch are *Begonia Prince Charles* of Denmark, a lovely foliage of the Rex class; *E. Ensign*, a valuable double winter-flowering kind. *Platyterium Veitchi*, a fine and distinct stag-horn Fern; *Polypodium Schneideri*, which received a First-class Certificate, and is one of the most remarkable of hybrid Ferns; and *Pteris Boltoni* and *Polypodium nerifolium cristatum*, both fine decorative kinds.

POLYGONUM BALDSCHUANICUM.

On September 13, 1894, the Société Nationale d'Horticulture de France allotted a First-class Award to this plant, when the following description of it was published: "Polygonum Baldschuanicum grows wild in Turkestan (easter Bokhara), at an altitude of 3,500 to 5,525 feet, and where it was discovered in 1882 by M. Regel, fils. At first known as *Atraphaxis* sp. nova, it received its present name and was described and figured by Ed. Regel in 1883. It is a herbaceous species, the stem, woody at the base, is robust, and attains a height of 13 to 16 feet. The leaves are a beautiful green, cordiform or hastate, the flowers white, faintly rosy, forming long handsome trusses; they are succeeded by winged fruits, white at first, then red, and themselves decorative. The plant scemes hardy in Paris, for if the stems die in winter, fresh shoots are sent up in the spring." M. V. Lemoine of Nancy, who sends us the photograph (fig. 4), has grown this plant for two years, and is well satisfied with it. In two months a medium sized plant grew 10 or 13 feet high; the stems are twining, attaching themselves to any handy support; flowering commences in June and lasts until September. All the ramifications of the stem form close panicles, sometimes erect, sometimes horizontal, sometimes recumbent; they give an appearance as of wreaths supported on a trellis formed by the plant. M. Lemoine set the plant at the foot of a dead Elm tree, it soon reached the lower branches, covering them all the summer with a multitude of white flowers, very beautiful and effective. The flowers are very useful for cutting, and the plant itself is hardy.

THE GLADIOLUS.

I WAS interested in reading Mr. Krelage's remarks at p. 701 of the last volume on the more recent hybrids of Gladiolus. After the *G. gandavensis* hybrids, the most beautiful seem to be those of the G. Lemoinei section, and as *G. Nanceianus* are from Mons. Lemoine, that gentleman may be congratulated on the result of his work in this direction. For years I have urged the importance of amateurs taking up the culture of the various species of Gladiolus, and hybridising them in various ways. What is chiefly required for their culture is a light sandy loam. Dean Herbert gives a very interesting account of his successes and failures in his book on *Bulbs*, published by Ridgway & Sons, Piccadilly, in 1837. This includes a paper on what he terms "Cross-bred Vegetables, or crosses and hybrid intermixtures in vegetables." We have learned much since Herbert's time, and as it came out in the year the Queen began to reign, we have in the *Amaryllidaceae* a starting-point for any one who would endeavour to trace the history of such a genus as the Gladiolus during a period of sixty years. Gaertner had tried, and as he thought, successfully to obtain bi-generic mules of various plants, and up to that time, as Herbert states, none had been obtained. He says, "The fact is, that in this country, where the passion for horticulture is great, and the attempts to produce hybrid intermixtures have been very extensive during the last fifteen years, not one truly bi-generic mule has been seen, and although I by no means presume to assert that such a production is



FIG. 4.—POLYGONUM BALDSCHUANICUM: HARDY PERENNIAL CLIMBER; FLOWERS WHITE.

Nursery, King's Road, Chelsea, gave evidence of unabated energy in every branch of their extensive plant nursery. Of their new introductions, *Didymocarpus malayanus* is a dwarf species, pretty in leaf and flower; *Aglaonema longifolium* var. *Curtisii*, is a pretty hothouse plant with leaves of a light green colour with silvery spots; *Maranta major*, a strong-growing species, of great usefulness as a decorative plant for apartments, &c.; and *Acidanthera bicolor*, a re-introduction

white, spotted with green, and with carmine veining; *C. Duchess of Connaught*, white, tinged with emerald-green, and flushed with rose; and *C. Si Julius Goldsmid*, a dwarf kind, red with crimson veining. Of the famed Veitchian strain of *Amaryllis*, *A. Eros*, and *A. Rosalind*, two superb light-coloured kinds, and *A. Myra*, and *A. Frelces*, two brilliant orange-scarlets, have been adjudged the best. Of the *Rhododendrons*, *R. Little Beauty* (*Monarch x malayanus*), a neat plant, with glowing carmine-

impossible, experience shows it to be improbable, and those (referring to Gaertner's experiments) who fancy they have obtained one, must forgive my wishing to see it forthcoming, and to examine whether it is certainly of such descent as they suppose."

Returning to the subject of this paper, Mr. Krelage states that Herbert and others had freely crossed *G. psittacinus* and *G. oppositiflorus*. I do not know what others have done, but Herbert does not say in his book that he crossed *G. oppositiflorus*. He describes *G. oppositiflorus* in vol. v., second series of *Bot. Rep.*, as being a native of Madagascar, where it had been found by Forbes, and states that the *G. gandavensis* of gardens is a cross between *G. oppositiflorus* and *G. natalensis*. In a later paper communicated to the Horticultural Society in October, 1846, and published in 1847, Herbert again alludes to these crosses. He says *G. cardinalis* and *G. natalensis* refuse to mix with each other, but do so freely with *G. oppositiflorus*; but in neither place does he make any allusion to having effected the cross himself.

The true plant has flowered at Kew, and is well figured in the *Botanical Magazine*, t. 7292. If Van Houtte's statement cannot be taken as correct, there may also be some doubt about Herbert's, as he does not seem to have verified them. The plant figured in May, 1839, *Botanical Magazine*, t. 7292, seems to be just such a plant as we might expect *G. gandavensis* to be before it was taken in hand by the florist; and all the beautiful varieties raised in England and France might have been so produced by ordinary generation and good culture, selecting the best varieties year after year as we know has been done in the case of the Chinese *Primula* and some other garden-plants. Some of the more beautiful species of this genus had been introduced before 1837, but in that year a very handsome new variety flowered with Messrs. Rollison, *G. Mortonius*, the flowers of good form and beautifully marked with pale-rose or pink on a white ground (*Botanical Magazine*, t. 3680).

In 1842, the following were described by Herbert in the *Botanical Register*: *G. crispiflorus* (81), *G. caucasicus* (82), *G. aquinoctialis* (97). This he adds exists at Spofforth, but it had not flowered; it was from Sierra Leone, and the only known tropical *Gladiolus*. Dr. Lindley had a dried specimen in his herbarium, *G. oppositiflorus* (98), as described above. In 1843, *G. splendens* (61), a garden variety, is described; and in 1844, *G. festivus* (87), a Cape species which flowered at Kew. There are no species of *Gladiolus* figured in the *Botanical Magazine* from 1838 until 1864. Previous to that year, Mr. Saunders sent a collector to Cape Colony, a Mr. Cooper, who amongst other productions, sent numerous species of *Gladioli*, and as a result *G. sericeo-villosus* was figured in *Botanical Magazine*, t. 5427. The plant grew to a height of about 4 feet, producing a long densely-flowered spike of yellow flowers, the stem and spathe thickly clothed with shaggy silky hairs; it is a very remarkable and distinct species. Following this came other distinct and beautiful forms from the liberality of the late Mr. W. Wilson Saunders, and the industry of his collector, Cooper.

In 1866 *G. papilio* was figured, t. 5565, and well described as follows:—"Nothing can well exceed the delicacy of the pale purple of the upper petals, or the vividness of the deep purple and golden-yellow markings of the lower ones."

In 1869 the gorgeous *G. cruentus* was figured, t. 5810; it was engraved from a specimen flowered by Mr. W. Ball in his nursery at Chelsea; and was well described by the late Mr. Thomas Moore in the *Gardeners' Chronicle*, 1868, p. 1139, and although this species is not mentioned by Mr. Krelage in his paper, it has been the primal source of many fine garden varieties. Sir J. D. Hooker says, "The original plants that have hitherto flowered are made over to be hybridised, so that in all probability the pure race will soon be lost to cultivators." The next in order, 1870, is *G. Saundersii*, t. 5873, said to be "a much more handsome plant than *G. psittacinus*, remarkable for the vivid colour of the curiously delaxed and very broad perianth." It was detected and sent home by Cooper. In 1871 the very remark-

able dingy-coloured species *G. dracocephalus* was figured, t. 5834. "The lurid hues of its flowers are wholly unlike those of any of its congeners." This was also found by Cooper.

In 1872 we have *G. purpureo-aureus*, t. 5944. This was also imported and flowered by Mr. W. Ball at Chelsea, and is one of the parents used so successfully by M. Lemoine. The sepals and petals of this species are pale yellow, heavily blotched with purple. The next species figured in the *Botanical Magazine* was in 1875, *G. Cooperi*; as its name implies, it is one of the more remarkable introductions of Mr. Wm. Cooper, and the editor remarks on this and others introduced by him, that he has "enlarged materially the groundwork upon which hybridisers can carry forward their experiments."

In 1877 two species are figured, *G. ochroleucus*, t. 6291, introduced by Mr. W. Bull from the Taovav, and the truly distinct and pretty species *G. Eckloni*, t. 6335, sent over by Cooper, and first flowered by Mr. Elwes at Cirencester. The flowers are small, well formed, and densely spotted of a red-purple colour on a pale ground.

In 1879, *G. brachyandrus* was figured, t. 6463; it is a native of Zambesiand, and was first sent to the Edinburgh Botanical Gardens, and flowered by Mr. Sadler. The perianth is upright and of a pale scarlet colour. In 1884 another of the species from tropical Africa was figured, *G. Quartianus*, t. 6739. It was gathered in Abyssinia by Wm. Quartin Dilloo, and by Sir John Kirk in the Zambesi country. The flowers are yellow, flushed and spotted with scarlet. Mr. Baker says, "it certainly has a claim to take rank amongst the finest species of this beautiful genus." In 1885 *G. Kotschyanus* was figured, t. 6897. This is a truly remarkable species, a native of Persia and Afghanistan. Mr. Baker says, "it is the first fruits from a horticultural point of view, of Dr. Aitchison's labours as botanist to the Afghan Boundary Commission." The flower-stems are slender, stiffly erect, furnished with small bright lilac-purple flowers.

In 1887 there is a figure of *G. Watsonioides*, t. 6919; it was found on Mount Kiamanjaro, by Messrs. Thomson and Jobstou. The flowers are scarlet, thinly placed on a somewhat slender stem. The only other figure is one of *G. oppositiflorus* in 1893. The first quarter of a century there was no species introduced, and but for the enterprise of a private individual the period would have been longer; but if anyone will turn up and examine the coloured plates, which I have pointed out, they will see how ample is the material with which the hybridist has now to deal as compared with that to which Dean Herbert had access in 1837, when his exhaustive book was passing through the press. Herbert grew all his plants hardy, and the hybrids, he says, did "well in the natural soil, which is a good yellowish light loam, suitable for Barley; and also in the artificial borders of peat and sand." His hardy crosses were between *G. cardinalis*, *bandis*, *carneus*, *infatus*, *angustus*, and *tristis*; and they varied with every shade of colour, from white to scarlet, rose, coppery, and blackish-purple, and some are exquisitely speckled in consequence of the cross with *tristis*. As the worthy Dean's experience of open-air culture was most successful, I will give it in his own words: "They succeed best when grown into a thick tuft, in which state the profusion of bloom is admirable, the cluster of bulbs and the old skins of decayed bulbs permitting the wet to drain away, and preventing the earth from lying too close and heavy on the bulbs in autumn and winter. Clusters have now stood undisturbed at Spofforth above twenty years, with the precaution of covering them with leaves from November to April. There is danger in disturbing and parting them, for numbers will rot if reset separately; and if they must be divided it is best to do so in April, or if it be done in the autumn, the roots taken up should be potted and turned out again in the spring." Many of the specific forms introduced since 1864 are hardy enough to stand out of doors unprotected. I had *G. Saundersii* flowering for several years in succession, but it did not increase, and died during the severe

frost in January and February, 1895. Even the garden varieties of the *G. gandavensis* type will stand the winter in the open borders, and, in truth, some bulbs that had been left in the ground when the collection was taken up, have flowered very strongly the following season. I would point out to amateurs that the *Gladioli* is one of the easiest of plants to cross-fertilise or hybridise, and if the more recent introductions are still to be had, and suitable garden-soil available, no better or more interesting material could be had for an amateur to begin with. The seedlings flower strongly the second year. *Jas. Douglas, Great Gearys, Iford.*

THE CHRISTMAS ROSE.

Few hardy plants are more esteemed than the Christmas Rose (*Helleborus niger*), particularly the best forms of the plant now fairly plentiful in gardens (see fig. 5, p. 19). Briefly, it is the only plant in the open garden at this dreary season of the year that can be said to yield a good number of beautiful flowers, and this without much trouble.

At this season a few remarks of the culture of the plant will not be out of place, for though the plant has been an inhabitant of our gardens for something like four centuries (it was in 1586, according to London, that it was introduced from Austria), it is, in many instances, painfully evident either that the cultivation of the plant is not well understood, or the surroundings are unsuitable. I am not unmindful of the benefits of a good soil in the cultivation of the plant; at the same time, elevation, shade, and the like play important parts. But if we would follow nature in this, in some instances at least, we could only decide that these *Hellebore*s required an exceedingly shallow soil, and that granitic chips formed the chief requirement of the plant. We know, however, from experience that the exact opposite is the fact, and that the plant invariably thrives in deep rich soils, especially in such that are rather clayey, if sufficient sand to prevent too much adhesion be added.

As to the granitic chips, in the districts where I have seen these things do best no granite whatever existed, and in parts of Gloucestershire and Cheshire they are cultivated by the acre, and in similar quantities in the neighbourhood of Bath, where they are equally luxuriant. Nearer London the finest examples I have seen or heard of were only a few yards distant from the North Tower of the Crystal Palace; and in a private garden, of which for some years I had charge, were dozens of magnificent specimens about 2½ feet across. These also were in clay soil for the most part, and during December and January of each year these plants never failed to produce their handsome flowers by the bushel. Indeed, it was possible to gather dozens without their even being missed—rather it did good, as it gave room for the late buds to rise and expand. In this particular instance a very fine form of the major variety was grown, and the thick coriaceous foliage, which was most persistent, was an attraction in itself. This persistency on the part of the leaves of this plant is one of the surest signs of a perfectly happy condition, an item in the low-lying fog-smitten county of Middlesex that is a great rarity. And where the foliage is well retained in this manner, the flowers push themselves forth with a vigour that is unknown in gardens where the greater number are cast during the summer heat. Giant clumps such as those named will send their roots down to a depth of 3 feet, and where this is the case all else will follow. One of the greatest mistakes in the culture of the Christmas Rose is that of attempting to move, or rather transplant, one of these big specimens intact, for the simple reason that the long roots refuse to give off fibres, the result being the rapid decline of the plant. Frequently the desire has been expressed to transplant a very large example in this way, but in each case I have recited a total failure of my own with one such plant, and though special soil to a depth of 3 feet was given, and the plant was only a few minutes in being transferred to its new home, the whole thing was a hopeless failure. And some time later, when the plant



FIG. 5.—HELLEBORUS NIGRA VAR. ANGUSTIFOLIUS: FLOWERS PURE WHITE. (SEE P. 18)

had lost every leaf, and the great head of bloom refused to rise as usual, the plant was lifted and examined, only to find a mass of rotten and decaying roots where health and vigour were a few weeks before.

When these plants are well established they may remain for years in the same spot, content with a good mulching of manure as soon as the flowering is over; this will assist in keeping them cool during summer, and prevent the association of manure with their beautiful flowers. Then as to the time of planting, there are differences of opinion, as may be expected; but any who have made a study of the matter and time the new roots are produced by this plant will be alive to the importance attaching to planting in early autumn; while the need for this would appear greater for the southern than for the northern counties. Plants of about three or four crowns should be planted, and a deep bed of soil provided. Shade of a light kind is also of importance, and that provided by Conifers, Hollies and other shrubs is the right kind of shade. *E. Jenkins, Hampton Hill.*

COLONIAL NOTES.

CROP REPORT OF NOVA SCOTIA.

THE Provincial Government Crop Report of Nova Scotia is now to hand, and the secretary for agriculture, B. W. Chipman, is "able to say that the promise then (last July) of a bountiful harvest has been fully realised, and the husbandman being abundantly rewarded for his labour . . . It may be said generally that this is a most fruitful year, and the result of the harvest is of a very satisfactory character, if we except the Potato crop, caused by the excessive rains of the latter part of the season."

QUEENSLAND.

Mr. F. M. Bailey, the colonial botanist, has issued an addition to the series of his contributions to the *Queensland Flora*, containing descriptions of newly-discovered plants. Descriptions are also given of various plants from New Guinea. A deeply-lobed frond of *Asplenium nidus* is figured.

NEW ZEALAND.

We have received the *Annual Report for 1895-96* of the government biologist of New Zealand, containing accounts of various fungi and insects in which the farmer is interested. It is satisfactory to find that the farmers are alive to the value of the labours of the biologist, Mr. T. M. Kirk.

COCKROACHES IN GRENADA.

We are free in Grenada from the parasitic, which does so much harm in neighbouring islands, but I wish one could say the same of cockroaches, which abound here. Being so well known in all tropical lands, surely there must also be known some good remedies against their ravages to books. I should be glad of a few recipes to try. The one I use is painting the covers of books with diluted corrosive sublimate; it is a great check for a while, but has to be repeated rather often, and this is not such an easy matter where a library rapidly increases. Bookbinders would be conveying a great boon to those living anywhere in the tropics if they could mix some composition with their colours which would prove no tempting bait to this particular insect. Some shades of green, strange to say, are preferred by these pests, and a new copy bound in green of Schlich's *Manual of Forestry*, vol. iv. (1895), left on a table one night, has been spoilt in appearance by the white patches all over the covers, where the cockroaches have nibbled away the green. They are not adverse to gold, for the gilded titles at the backs of books are treated by them with scant respect. Some of Dr. J. C. Brown's works on Forestry, Water Supply, &c., are bound in a light green, which they do not touch; on the other hand, the *Annual Reports of the Missouri Botanic Garden*, and Bentham & Hooker's *Genera Plantarum* are not at all distasteful to them. What with cockroaches, milkwed, &c., to keep in good order a library in the tropics is a great undertaking. *W. E. Broadway, Grenada, B. H. I., Dec. 8, 1896.*

THE ROSARY.

TEA ROSE, FIAMETTA NABONNAUD.

I AM much obliged to "A. P." for the information given on p. 686 of the last volume of the *Gardeners' Chronicle*; also for his kind observations regarding my previous contribution. Previously to reading his paragraph upon the subject, I was not aware that Fiametta Nabonnauud was the result of a cross between Papa Gontier and Niphotos. I understood that the eminent raiser himself, M. Nabonnauud, to whom we are indebted for many precious varieties, including l'Idéale, had described it as a "white Papa Gontier," which can hardly be regarded as an accurate description, if, as your correspondent asserts, it derives half its characteristics from Niphotos. I fear that some of our British rosarians have underestimated the value of Fiametta Nabonnauud, inasmuch as they have not included it in their catalogues. It is one of the finest Tea Roses I possess, and is quite as floriferous as either of its parents—and that is saying much. Climbing Perle des Jardins is a much more reliable variety for open-air cultivation than the incomparable Marschal Niel. The latter does not suit our Scottish climate, even when grown, as it is in my own garden, on a strongly-sheltered south wall. Its beautiful buds are almost annually ruined by the rains of early summer; it is only, indeed, in an exceptionally dry and sunny season that, inspired by such atmospheric conditions, they reach the full glory of the perfect flower. Nor, even when it reaches its floral perfection, does it exhibit the perpetuality of climbing Perle des Jardins. *David R. Williamson.*

REMOVING AND TRANSPLANTING FRUIT AND OTHER TREES.

(Continued from p. 759, vol. xx.)

It is probable that the removing and re-planting of larger trees will have greater interest for the gardener than the getting up and transplanting of ordinary nursery stock. To start with, roots are of two classes, according to their function, the large woody ones, including the tap-root, are to anchor the tree firmly in the soil; the finer ones, generally near the surface, are to nourish the tree. It is worthy of notice that trees, and especially Conifers, planted in sheltered belts among deciduous forest trees, or even nursed, as we call it, by Larch, having little need of the anchoring roots, develop chiefly the fine fibrous surface rootlets necessary to nourish the tree.

When, therefore, the Larch or other surrounding trees are thinned out or felled, the first strong wind topples them over, this being an especial danger where the surface-soil is thin, resting on a chalk, stoney, or clay sub-soil.

It follows, therefore, that in removing large trees to transplant them, the chief desideratum is to preserve, as far as possible, all the roots with their attached fibres, while most of the thick anchor-roots may be removed by the saw or axe, the tree being allowed to heel over when the soil has been all picked out from among the forking-roots, will generally permit this to be done. Should the tree be a very large and heavy one, it is best to have a tripod with blocks and pulleys, called a "gin," so that by means of chains or ropes, the tree may be lifted bodily out of its place, and while suspended, be cleared of its coarse roots, as well as have the bruised and broken ends of the rest removed by a sharp knife. This done, the tree may be placed on a broad-wheeled trolley, such as is used by stone-masons, steadied by guy-ropes, and hauled to its destination. Much now depends upon the skill exercised in preparing the hole to receive it, and a few hints for which I have to thank Mr. Holmes, of Brook House, Norwich, I will now give.

First, take care that the hole to receive your tree is made large enough, which may easily be assured by running a tape-measure across the roots, and getting out your hole at least 1 foot larger in diameter. The centre of the hole should be furnished with a good firm cone of clay, on

the apex of which the centre of the forking roots must rest, the anchoring roots straddling on either side, leaving the fine fibry roots flowing all round. When the tree has been fixed in a satisfactory position, then the important operation of filling in the soil must at once be proceeded with. Let it be added a little at a time, evenly distributed among the root-fibres by the hand or a stick, and gently trodden, so that there is not any part of the root, if possible, untouched by the added soil. Continue to fill in a little at a time, working it well among the roots and rootlets, and when all is replaced, let the tree be secured by guy-wires or ropes; but in using the first-mentioned, take care to protect the hole of the tree so that the wire does not chafe or bruise it. I have seen at Brook House, Oaks 30 to 40 feet high, with a girth of 30 inches or more at 2 feet from the ground, successfully removed thus, and also a fine Tulip-tree of almost like proportions.

My practice has been, however, to prepare large trees for removal in the following manner:—In the spring draw a circle round the tree you wish to remove in the autumn, 2, 3, or more feet from the bole, according to the size of your tree, and take out a trench 2 feet wide around this line, as deep as you think necessary, to include all the roots, and then fill in with light-made soil and brick-rubbish up to the ground-line. This will cause the severed and other roots to make plenty of fine fibre, in the way a plant confined in a pot does, binding the circular block of soil into a moderately-compact ball. In the autumn remove all the added soil and rubbish from your trench, take off all the surface-soil down to the upper roots, and with a pick remove all you can get at from the bottom of the ball to lighten it. Now arrange your tripod over the centre of the tree, and affix your chain to its bole, first putting round it some coarse sacking to prevent chafing. Then raise the tree a little out of the hole, and with a fork pick out all the soil you can safely move to lighten it. This method is very convenient in the case of large Conifers, and I successfully moved eight Wellingtonias ranging from 12 to 24 feet in height, conveyed them by road a distance of nearly 20 miles, and replanted them without losing one, though the Wellingtonia is one of the worst Conifers to move when large.

The usual practice in nurseries is to lift and replant all stock at least once in three years, in order to make it safe in transplanting whenever demanded; and this plan, because it prevents the formation of coarse woody roots while encouraging the production of many fine fibrous ones, is commendable for many reasons. First, it secures a good holding ball, which if the tree be properly planted, and at the right time, will insure the operation being successful. Trees and shrubs of all kinds so treated do not suffer from removal, therefore my advice to the planter is, pay a little more to secure such trees, as in the end it is more economical, as well as far more satisfactory.

This reminds me of an amusing episode in my experience. A gentleman doing extensive planting, used numbers of Scotch and Austrian Pines, and as long as the stock held out, was served with recently transplanted trees. But there came a time when the stock of such trees was quite exhausted, and the little remaining to do was done with Pines of the same age, that had not been removed for some time. This was very noticeable, as they had long sturdy shoots well furnished with foliage, and in a few days I had a letter from my client asking me to take up all the first planted, and supply their places with some more like those last sent. I used all my diplomacy to avoid this alteration, and await the result till next season. This was a dry, hot year, and though the unseasoned Pines were watered and cared for, but two survived out of at least a score, while of the properly-prepared specimens, but one died. *Verbenum sap!*

There are a few subjects the nurseryman has to deal with that will not safely transplant from ordinary soils, notably among Conifers the large-fruited Cypress of Lambert (*Cupressus macrocarpa*), and its bright green-coloured twin brother C. Lambertiana. These have a habit of growing out of all proportion to the size of their roots, so that should the soil be

NOTICES OF BOOKS.

HOW TO MAKE THE MOST OF THE LAND: A POPULAR GUIDE TO THE SCIENCE OF COMMERCIAL FRUIT CULTURE. By Sampson Morgan. (The Horticultural and Agricultural Bureau of Information, 4, Adelaide Street, Charing Cross.)

The name of the author of this useful work is well known as that of an energetic and practical advocate of the extension of the cultivation of British fruit on a sounder basis than that worked by our forefathers. In the work before us, consisting of 105 pages of matter, including a capital introduction, the subject of how to make the most of the land is dealt with in a perfectly plain, clear, and practical manner, from beginning to end. The several paragraphs under the headings of The Science of Production, The Question of Varieties, Improved System of Culture, Land for the People, Factory and Field, Quality of British Fruits, Will Fruit Culture Pay?, Secret of the Market Glut, Potash for Fruit, Fruit and Wood, Commercial Fertilisers, Exhaustion of the Soil, Root Pruning, Thinning Fruits, Quality and Quantity, The Right Varieties, &c., afford much useful and trustworthy information, and sound advice, condensed into a small space, to market-gardeners and fruit-growers generally.

Under the headings of Profitable Glass-house Cultivation, Profitable Hardy Fruit Cultivation, Profitable Market Garden Production, Grapes, Tomatoes, Cucumbers, Strawberries, Asparagus (Hardy Fruit), Planting Trees, Apples, Pears, &c.; (Kitchen Garden), Celery, Mushrooms, Potatoes, Cauliflowers, and Asparagus, are one and all handled in a lucid and practical way under their respective headings; as also are the notes on the Science of Distribution, Markets and Market Salesmen, The Art of Packing, The Use of Punnets, Grading and Buyers.

Under the heading of Quality of British Fruits (p. 22), the author says:—"As I write I find that, after eight years' experience of the principles I advocated from the start, and in spite of increasing shipments from abroad, that during the present week, whilst the finest American Apples are being sold at from 10s. to 16s. per barrel of 3 bushels to the barrel, that English Cox's Orange Pippin, one of the special varieties I advocate should be grown freely, are selling in large parcels, and to arrive even—that is, in a market sense, being bought up by buyers before they are packed and marketed, at the rate of 9s. per bushel, and as against the American fruit equal to 27s. per barrel, topping the latter values by 100 per cent. when an average price is considered."

The author's practical and extensive experience of the kinds and varieties of fruits and vegetables which command a ready and profitable sale in Covent Garden is set forth in clear and forcible language, and is combined with sound cultural details, given in connection with the several kinds of fruits and vegetables which he recommends to cultivators.

How to Make the Most of the Land is a book which should be of great interest to all of those who are now embarking in the business of market gardening who may consult its pages, and who will do well to work upon the lines laid down by the author as nearly as circumstances will allow.

"The secret of the market glut," we are justly told (p. 23), "lies in a nutshell. It is caused by heavy consignments of inferior products, or the marketing of produce for which only a limited or perhaps no demand exists. The market glut is caused by those who are ignorant of the market's needs. There never can be a glut of choice products; it is the careless producer of inferior grades of goods that is the cause of all the trouble. The planting of unsaleable varieties, and the marketing of ungraded goods, badly packed, will never answer in these days. The man who will not bring intelligence and skill to bear on the cultivation of the land ought not to continue in the business, and the sooner he gets out of it the better for all concerned."

In the case of heavily-cropped trees, the thinning of the fruit is recommended (p. 31):—"This should

wet and light, the wind twists them round, blows them on one side, and I have known handsome specimens, 8 to 10 feet high, blown clean out of the ground. In nurseries, therefore, these difficult trees are grown in pots while young; but even this has its drawbacks, as unless they are looked after constantly they will make corkscrew roots. I therefore advise planting only quite young specimens of *Cupressus macrocarpa* or *Lambertiana*, which, by-the-by, are pre-eminently the best of all Conifers for the sea-side; and it will be found that these soon catch up and overtop any other Conifer, 3 feet in a season being no unusual growth for them to make.

Another difficult subject is *Quercus Ilex*, the Evergreen Oak, which should always be nursed in pots, and these plunged in ashes or other light material. The upright Evergreen Oak (*Q. Forli*) and the vigorous and useful variety sent out by an Exeter firm, and called from this Lucombe's, with oblong entire leaves, as well as the Cork Oak (*Quercus suber*) are best nursed in pots, to ensure safe transplantation. Among flowering shrubs, the attractive and fragrant double *Glossy* (*Ilex europæa* fl.-pl.), making long twisting roots with little fibre, is also usually grown and sold in pots. Do not attempt to get them out, but smash the pot with a blow of the spade, and plant with the portions of the pot still adhering to the ball. Some firms use perforated pots, but these are of little real advantage, as if the same are plunged for any length of time, the roots escape through the perforations, and the result is almost the same as though the plants had been nursed in the open quarters. The practice of growing young Conifers, Hollies, and other shrubs in Willow-baskets "*en panier*," common in Holland, Belgium, and France, is not advisable. The mycelium or spore of various "Toadstools" (fungi) may be introduced into the ground in many ways, but most frequently by the agency of decaying wood. As everyone knows, the sapling Willow-waifs used in making baskets very soon decay, more especially when they are not "peeled." The continental panniers are made of these, and should the shrub or tree be planted just as received, the containing basket soon decays, and much flocculent mycelium is produced which will probably attack the living roots of the plant, especially those bruised or injured.

I think this is of so much importance that I must ask to enlarge upon it, and I having said all needful about transplanting, will finish with a few words about staking and protecting.

The common practice, when a tree is planted, is to drive a stake down close to it and parallel with the bole, and then to tie it securely to the stake, putting a wisp of straw or some soft material between to prevent chafing. In Kent and parts of Sussex, where the orchards are laid down as pastures, it is necessary to put a protecting cradle to the trees. This is made by driving down three or four split pieces of Chestnut, Ash, or Larch, and then nailing cross pieces at intervals from the base to the top, forming the cradle. It is then a simple operation to tie the tree to each of the uprights at the top, and to make it quite steady, whatever wind may blow.

In plantations where it is not intended to allow grass to cover the soil, and sheep or cattle to graze between the trees, one or two stakes is enough, but these should never be put close to the bole, but at an angle, so that the points may not be near the roots, as this gives greater stability; and, moreover, should the stake decay at the base, the danger from the fungus spore (mycelium) is not so great. I have known a fine orchard of young Cherry trees planted and protected by such cradles as I have mentioned, but when the trees had got to bearing size, they all at once began to show signs of ill-health; their leaves were pale and flaccid, and fell before their time, while in the next spring, the growth was short and stunted, and the colour pale and sickly. On being consulted, I at once divined the cause, and I suggested exposing the roots of some of the worst affected. Surely enough we found a mass of mycelium smelling like putrid mushrooms, which had started from the decaying points of the timber, and had attacked the living roots of the Cherry trees. All the affected trees had to be cleansed, and fresh soil substituted. *Experience.*

(To be continued.)

be done—first, to preserve the vitality of the tree; and, secondly, to ensure larger and better fruits of Apples, Pears, &c.," bearing in mind "that five dozen giant Apples are worth two bushels of medium-sized fruits." Thinning will help in the production of marketable specimens. On the other hand, readers are reminded that the consequence of allowing the trees to overbear, "is to kill the goose that lays the golden egg."

With the above remarks, we have every confidence in recommending *How to Make the Most of the Land* to those who have hitherto, as now, exercised their minds a good deal on the all-important subject.

HARDY CONIFEROUS TREES. By A. D. Webster. (Hatchinson & Co.)

It is not everyone who possesses the *Report of the Conifer Conference*, held by the Royal Horticultural Society in 1891—a book containing a larger amount of information on the subject of cultivated Conifers than any other book in the language. So large is the mass of detail comprised within it, that many would be glad to get a digest of such portions as might be suited for their purpose. This they will get in a considerable degree in Mr. Webster's present publication, which, to quote the full title, is "A Concise Description of each species and variety, with the most recently-approved nomenclature, lists of synonyms, and best methods of cultivation; also chapters on the commercial aspect of Conifers, quality of British-grown coniferous timbers, Conifers for various soils and situations, Conifers of different characteristics, propagating Conifers, enemies of Coniferica, &c." The chapters here enumerated have formed the subject of communications to the horticultural journals. The descriptions of the several trees taken from the living plants, though of little value to the botanist, are just what are wanted by the general planter, who does not care to be burdened with technical details. With respect to the discussion going on in these columns with reference to the Deodar, we may cite what Mr. Webster says:—

"This tree stands almost unrivalled in the grandeur of its lithe and beautifully-pendulous branches: indeed, it is open to question whether a more distinct and graceful Larch Conifer has yet found its way into this country. Few trees are more accommodating as to soil than the present species, but it is not well adapted for cold and exposed sites. . . . The rate of growth is rapid, 50 feet in height having been attained by specimens in England in fifty years. Timber produced in this country is fine-grained, but soft, and not at all durable."

Under the head of the Lebanon Cedar, Mr. Webster notes a curious variety which sheds a considerable portion of its foliage every autumn, thus approximating to the Larch.

We should have welcomed some expansion of Mr. Webster's opinions as to the distinctions between the three American Spruces—*Picea alba*, *nigra*, and *rubra*. The latter form he refers to *P. nigra*, whilst *P. alba*, in our experience, is very scarce in cultivation. *P. nigra*, moreover, is one of those Conifers said to thrive in places where the roots are at times or constantly submerged. As these are points of some interest, we hope Mr. Webster may be able to furnish us with further results of his experience respecting them. Very valuable are the author's all-too-brief notes on the quality of British-grown coniferous trees, as affected by soil and situation (see p. 160, *et seq.*).

The variability of Conifers has naturally attracted Mr. Webster's notice. He calls attention to the fact that it is easy to recognise a particular species growing at a given spot, but often very difficult to determine the same species growing elsewhere. This will show how difficult and precarious must be the identification of Conifers from little twigs or wisps of foliage, such as are too frequently sent to the Editors of the gardening papers for identification!

Mr. Webster appropriately adds numerous references to his own communications in the various journals, and he would have done well to have been equally liberal in his references to the publications, and especially to the figures given by his predecessors. The Conifer Conference, at which were exhibited by far the most numerous collections of species ever

got together, and the report of which is most comprehensive, might almost never have been held for all the reference to it in this volume, though it must long be the quarry whence writers of books like the present must derive a large share of their information. Engelmann, Sargent, Gordon, Murray, Beisser, Fowler, Veitch, Hutchison, Dunn were surely worthy of most conspicuous recognition than they get in these pages.

The writer claims for his book that it is intended as a "cheap, handy, and exhaustive popular guide to hardy Conifers." Exhaustive it could not be consistently with its other qualities, but the other adjectives are applied so appropriately that we cannot but heartily commend the book to the notice of Conifer-lovers as likely to be very useful to them, and as very free from inaccuracies.

ORCHID NOTES AND GLEANINGS.

CATTLEYA MAXIMA GIGANTEA.

This free-flowering plant bears handsome blooms, which appear at the present season. It is a comparatively old inhabitant of our gardens, and the plant, in the possession of the Royal Botanical Garden, Edinburgh, was purchased from an importation of Messrs. Linden last year. The pseudo-bulbs vary from 1 to 1½ foot or more in height. In colour, the sepals and petals are of a light shade of rose with darker venations upon them; the beauty of the lip consists in numerous dark purple coloured lines, and a band of yellow running through the centre. When seen amongst flowering plants of *C. labiata autumnalis*, the contrast between its flowers and those of the latter is very noticeable.

R. L. H.

THE WEEK'S WORK.

THE KITCHEN GARDEN.

By W. POPE, Gardener, Highclere Castle, Newbury.

To Grow Onions of Large Size.—Where bulbs of extra-large size are required for exhibition or home use, some forethought is necessary in selecting a suitable plot of ground in an open, sunny situation, and preferably one which has been deeply cultivated, and is in good heart. If this was touched, or roughly tined, during the later months of the year, it will need no further attention till the middle or end of the month of February, at which time a good dressing of fresh soot, and a sprinkling of an artificial fertiliser, should be applied, and lightly forked in, which is all that need be done till the time arrives for planting in April. Seed should be sown now, or as early in the present month as possible, taking care to secure a good stock of a trustworthy variety or varieties, if such be needed. In sowing, shallow boxes filled to about half an inch from the top with light, rather rich, soil should be used, pressing the soil firmly. Sow the seeds thinly, and cover lightly, affording water a few hours afterwards with a fine rose can. It may be advisable to cover each of the boxes with a sheet of glass, mice being partial to the seed. Place them in a pit or greenhouse, with a temperature of 45° to 50°, and as soon as the plants appear, remove the glass, keeping the boxes well up to the light; and when the plants show the second leaf, prick them out into boxes filled with warmed soil, allowing to each plant a space of 2½ square inches, and keep close for a day or two till fresh growth commences. Give them a light position, and a temperature of 30° for a time, leaving a little air on the house or frame night, increasing gradually as growth and the season advances, till they can be removed to a cold frame, and hardened by degrees. The aim of the cultivator should be to keep the plants sturdy and in a growing state till they are planted out, towards the middle of the month of April, or in northern counties a week or two later.

Early Peas.—If no Peas were sown outside in November, or having been sown have failed, a sowing should be made at this date in 3-inch pots, in readiness for planting out at the end of next month, or in March. A common error in raising Peas under glass is to afford them too much heat for the sake of getting them up quickly, thus causing the plants to grow weakly, and compelling their too early planting out. A better method is to place the pots in a cool pit or frame, from which frost can be excluded, for

although the seed will be longer in germinating, the plants will not make such a rapid advance, and the growth will be robust, and better suited for planting out-of-doors at the proper time than any that are raised in heat. Use pots that are clean, half fill them with moderately-rich turfy soil, and put six or eight Peas in each pot, filling up with soil. As the pots of plants should not be planted nearer together than 8 inches, it will be an easy matter to decide upon the number to be sown.

Dwarf Kidney Beans.—Continue to sow batches of these as required, place the seeds in small pots in a temperature of 65°, and when up keep near to the glass, thinning to three or four in each pot. When well into the third leaf shift into 8-inch pots, turning three small pots into each; use rich lumpy soil, and pot firmly, give them a light position, and grow on in a temperature of 65° to 70°.

THE HARDY FRUIT GARDEN.

By H. W. WARD, Rayleigh, Essex.

The Best Kind of Soil for Fruit-trees.—Fruit-trees generally delight in a strong, red, loamy soil, such as yields good crops of Wheat. It should be from 15 to 24 inches deep, and of average fertility. Where the natural soil is not of this description, the excavated holes should be re-filled with the most suitable mould that can be obtained; or if this cannot be done, a mixture may be made of some of the staple soil and some of the prepared loam, and a portion of this be placed around the roots of each tree. Road-scrappings and roadside-parings may be added to light soils with advantage.

Varieties of Apples.—The following varieties should be included in a select list of dessert Apples:—Beauty of Bath, Irish Peach, Devonshire Quarrenden, Lily Sudeley, Cox's Orange Pippin, King of the Pippin, Cox's Purnace, Worcester Pearmain, Ribston Pippin, Old Nonpareil, and Beauty of Kent. For culinary purposes, the following are good ones:—Kewick Codlin, Lord Suffield, Potts' Seedling, Lord Grosvenor, Northern Dumpling, Ecklinville, Stirling Castle, Emperor Alexander, Cellini, The Queen, Peasgood's Nonsuch, Blenheim Orange, Warner's King, Bismark, Lane's Prince Albert, Northern Greening, Annie Elizabeth, and Hambleton Deux-Aus.

Varieties of Pears.—Of Pears, Doyenné d'Été, Clapp's Favourite, Beurré d'Amanlis, Conference, Marie Louise, and Pitmaston Duchess may be mentioned, being good orchard varieties.

Varieties of Plums.—Rivers' Early Prolific (sure bearer), River's Mounarch, Victoria, and Belgium Purple will be found profitable varieties to grow in orchards or open garden.

Pruning of Fruit-trees.—The pruning-saw and pruning-knife should be used discriminately, and those engaged in the work should have an intelligible object in view—in the case of young maiden trees for instance, the formation of large fruit-bearing trees in as short a time as possible. The young leading shoots of standards, pyramids, and bush-trees, should be pruned back to within from 5 to 8 inches of their bases during the winter months, but the sooner the operation is performed after the fall of the leaf the better. Each of the shoots so pruned will make four or five young growths the following spring. These, when likely to become crowded, or to cross each other in growth, should be pinched to within 2 inches of their point of origo. The strong leading shoots should be annually pinched two or three times during the summer and early autumn months, and the weaker ones once until the trees have attained to the desired dimensions.

Wall Trees.—Any trees that are affected with scale and thrip should be treated as follows: Withdraw the nails, burn the shreds, and paint the affected branches and shoots with a mixture of about 4 oz. of soft soap in a gallon of water, a wineglassful of petroleum, and sufficient clay and soot to give it the consistency of thick paint. Stir this well before it is applied to the trees, which should be after the trees have been pruned. The pruning of Pears, Plums, Apricots, and Cherries upon walls, should be proceeded with, and the necessary training afterwards. These trees—excepting Morello Cherries—should have the shoots spurred or cut-back to the wood-bud nearest their bases, and the old spurs where standing too close together on the individual branches should be thinned out to prevent crowding, and all the shoots to be retained in all cases. A space of from 6 to 9 inches should be allowed between the shoots or branches of Apricots and Plums, but Pears require from 10 to 12 inches.

Every favourable opportunity should be taken advantage of to complete the nailing of the shoots of Morello Cherries to the wall. By reason of the great number of shoots which have to be manipulated, Morello Cherries require more time and skill to train them properly than do other fruit trees, which only require the shoots to be thinned-out a little as occasion requires, and the fore-shoots, if there be any, cut back to the basal wood. Strong leading shoots should be cut out where it may be necessary, in order to insure a proper balance of growth. If not already done, the nails and twigs securing the young shoots of Peach and Nectarine-trees to the wall should be drawn, the object being to prevent them flowering early by allowing a constant current of air to pass between the shoots and the sun-warmed wall, and with the same object in view, the process of re-arranging and re-nailing (as well as the pruning) of the trees should be deferred until a week or two before the flowers begin to open.

PLANTS UNDER GLASS.

By G. H. MAYCOCK, Gardener, Luton Ho, Luton.

The Stove.—Much will require to be done in the stove at the present time. Soils necessary for the potting of the various plants, should be placed in a convenient corner under cover. I do not favour elaborate composts, and as one kind of soil will not suit the requirements of all the plants, it is better to keep each separate, and mix them as required. All leggy Dracenas may be "tongued," and they will readily root if a little damp moss be placed round the cut, and moistened frequently with the syringe. Keep the plants moderately dry at the root, and the "loes" will then ripen, and may be potted up or placed in a pan after the toughed heads have been removed. Crotons may be treated similarly, and pretty decorative plants may be obtained sooner by the tonguing process than by striking cuttings. Specimen plants should be shaken out and repotted. A mixture of three parts loam and one of peat, with a liberal addition of sharp sand and a dash of soot, suits them well, but it should be mixed together perfectly. If the repotted plants be placed over a little bottom-heat, it will be an advantage. *Adiantum Andromannum* is very apt to get leggy, and the plants should be cut down each year, and then exercised to preserve a few of the large fleshy roots upon the stem. Plant them in pots or pans in a mixture of rough fibrous peat, charcoal, and sand, surfacing the whole with a little living sphagnum-moss. The plants quickly lose health if the compost becomes sour, and every care should be taken to crock the pots efficiently. *A. Scherzerianum* is especially valuable; and being very free-flowering, it affords much material for cutting from. Given good drainage, the plants give very little trouble. They should be potted in September or October, but if the work was not done then, or earlier in the year, it may be done forthwith. When turning them out of their pots, it is well to have a tub of warm water near, and by placing the plants into this, all the old material will come away quite readily. The atmosphere of the stove should now be kept a little more moist, and a temperature maintained of 65° by night, and 70° by day.

Ferns.—If a house is devoted to these plants, their management is simple, but too much heat and moisture should not be given at the present time. *Adiantum cuneatum* at this season requires only sufficient water at the roots to prevent the fronds from shrivelling. Gymnogrammas should be kept at the warm end of the house. As the stems of Tree Ferns ought not to become dry, it will render frequent waterings unnecessary at this time of the year if common moss be tied around the stems. A temperature of 50° by night and 55° by day will be sufficient.

The Forcing-house.—This house will be greatly in demand at the present season, and the use of water-bulbs in variety should be had, at intervals of two days. Before putting in any potful of balls, be sure that the roots are in sufficient number to permeate the soil, and cover the sides of the balls. These bulbs may consist of Hyacinths, Ixias, Narcissus, Tulips of the early single-flowering varieties, &c. Home-grown Lily of the Valley clumps free readily at this date, and those associate well with Spireas, Lilacs, Deutzias, *Staphylea colchica*, Roses, and other well-known garden plants, helping to form a very pretty display under glass or in apartments. A few moderate-sized specimens of Persia and large-flowered Lilacs may with advantage be lifted from the shrubberies, potting or tubbing them; or if only the flowers are to be used, they may be bedded in a

forcing-house. The potted plants may be stood in any house in which forcing has begun. *Rhododendrons*, *Gueldrs Rose*, &c., may be similarly treated. *Dielytra spectabilis* is a useful plant when strong masses of it are taken up for forcing, furnishing flowers which last well when out, as do those of *Solomon's Seal*. The last-named gives first flowers, and afterwards foliage that is useful in various ways.

General Work.—*Caladiums*: a few of the early rooted tubers may now be potted up and placed in the forcing-house. For early work, *C. argyries* is invaluable, it being useful for cutting from, and as small table or vase plant. Put them in 3-inch or 4-inch pots, and do not afford them much water until root action has commenced, or the bulbs may decay. A few *Gloxinias* may also be potted up. They are very effective when in flower if brought among plants of *Adiantum cuneatum*, and the corns should be potted up at intervals in batches. Carnations intended to flower in April, May, and June may be kept cool; and provided the plants were potted up in the autumn, the pots will be well filled with roots. Too much water is very injurious to them. If a house or heated frame is given up to their culture, fire-heat should be used only to prevent damping and keep it frost. We incessantly water, and frequently fumigate the structures occasionally. They conceal themselves among the young unfolded leaves at this time of the year, and the injury resultant is apparent before the cause. Should fungoid disease appear, apply the following mixture to the plants by means of a spray-syringe. It will check the disease, if not absolutely kill it, and may be applied once each week. Take 2 lb. of sulphate of copper and dissolve it in 2 gallons of warm rain-water; also 3 lb. of crystal soda, and dissolve in 1 gallon of hot water. When all is dissolved mix the two solutions together, and add 1 1/2 oz. of liquid ammonia, and 1 oz. of potash. Use 15 pints of mixture to 24 gallons of water. That not required for immediate use should be kept in an earthenware or glass bottle tightly corked.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower, Burford, Dorset.

Platyclinis (Doubrochilum).—Owing to the species of this genus being natives of Java and the Philippine Islands, it has been supposed that they require the highest temperature available in our Orchid-houses. Such, however, is proved by practical experience to be wrong. Such species as *P. glumacea*, *P. Cobbiana*, *P. filiformis*, and *P. uncatia*, when grown always in strong heat, are more or less attacked with red-spider, and consequently fail to maintain their green, healthy appearance. *Platyclinis uncatia* has been in flower here for several weeks past, and it still appears to be quite as fresh as when the first raceme opened. It is an easily cultivated species, and well-bloomed plants form very pretty objects during this dull season. The flower-spikes are produced from the centre of the young breaks, which at this date are but half grown. Afford the plant therefore copious supplies of water until the bulbs are fully matured. The plant should be suspended close to the roof-glass in the intermediate-house in a rather moist and shady position. The summer-flowering *P. filiformis* is now at rest, and should also be suspended in the intermediate-house at this period. Keep the compost just moist by occasionally syringing the foliage on warm sunny days; this will help to preserve the bulbs and leaves in a fresh and plump condition. *P. Cobbiana*, having recently completed its growth, should be similarly treated. The spring-flowering *P. glumacea*, has been since last July in the coolest part of the intermediate-house, but now that it has re-commenced to grow, a few degrees more warmth has become necessary. The growths, when about 2 inches high, commence to send forth a number of roots which quickly enter the soil, and if the plant requires repotting, this is the time when it should be done; but if it is inconvenient to repot the plants at this time, repotting should be done immediately after the flowers fade. *P. glumacea* *valida*, requires identical treatment. It can be distinguished from the type by its pale green-coloured growths, more robust habit, and its shorter but less graceful inflorescence. All the species root freely in a compost of peat and sphagnum-moss chopped rather finely. The pots or pans should be three-fourths filled with clean broken crocks. After such repotting, the surface of the compost should merely be kept moist until the flower-spikes are seen, when the supply should be gradually increased.

Cattleya-house.—*Colozyne Dayana* is at rest in this house, and I require sufficient water only to keep the

bulbs from shrivelling. The pretty dwarf *C. Rossiana* now flowering from its young growths, may be repotted after the flowers fade. *C. flaccida* and *C. lactea*, both being at rest, should be kept rather dry at the root until growth recommences.

In the *Cook-house*, plants of *Maxillaria Sanderiana* are developing their flower-spikes, which go in a downward direction; and any plants in pots should be examined, and pieces of stick or glass be placed under the spikes, or these will push through the compost into the drainage.

FRUITS UNDER GLASS.

By F. HARRIS, Gardener, Eastnor Castle, Ledbury.

Strawberries.—Plants for early forcing that were brought into heat in November will now be fast opening their flowers, requiring to be kept dry overhead and not too moist at the roots, affording them air on all suitable occasions. To favour the setting of the blooms, the trusses should be gently agitated so as to distribute the pollen. As soon as most of the blossoms are set, thin these to from four to six fruits on a truss, leaving fruits on the main stalks which have the most promising appearance. Increase the temperature to from 55° to 60° at night, according to the state of the weather, with a corresponding increase by day; syringe the plants twice a day, and fumigate lightly if any aphids be observed. Afford the plants weak manure-water in gradually increasing strength, until colour is seen in the fruits, when it must be discontinued, and more air afforded, so as to heighten the flavour. Introduce plants for succession at intervals of a fortnight or three weeks, and before doing so remove the dead leaves upon them, and remove the crust of soil lightly, replacing it with fresh loam and a pinch of artificial manure, and see that no worms are left in the balls; wash the pots, and dip the foliage overhead in a weak solution of soft-soap and tobacco-water, or any other safe insecticide. This is a very necessary precaution when the plants have to be forced in vineries and peacheries. The plants for various successions should be protected from the inclemencies of the weather, but well exposed in mild weather, or when only slight frosts prevail.

Melons.—Seed may now be sown if ripe fruits are required for table at the end of the month of April, sowing in small 60's about three parts filled with friable loam in not too dry a state, two seeds in each, covering lightly, and placing a little damp moss over the soil, in order to prevent evaporation of its moisture, and render watering unnecessary before the plants are up. Plunge the seed-pots in a bottom-heat of about 80°, and select the strongest plant in each pot when a true leaf is made; top-dress with loam at the same temperature as the hot-bed, and keep the plants up to the glass, so that drawing may be prevented, but still plunge the pots in water so that the roots will be chilled, and a severe check given. Afford water very sparingly, but avoid unwholesome dryness at the root. The Melon-house should now be got ready by giving it a good cleaning in every part, lime-washing walls, &c. I prefer 12 or 14-inch pots for early Melon growing, plunging these to the rims in a mild but steady hot-bed made up of leaves and litter. On the layer of crocks place a sod, the grassy side of which should be turned downwards; press the sod firmly, and above it place a quantity (three-quarters of the whole) of rich, heavy loam that has been stacked for a year, one part lime-rubble, with a small quantity of fresh soil well mixed together. Place the pot in the hotbed so as to thoroughly warm the soil throughout, and beat the soil firmly before planting. The young plants should be placed in the pots before they get pot-bound. Keep the plants well up in centre of the pots, sloping the surfaces gradually to the side, so as to prevent the water saturating the soil close to the stem. It is well to have a ring of zinc about 3 inches deep and 6 inches in diameter to dip round the plant, as it serves as a guard against slugs, &c. and by over watering water inside the ring, it is a preventive of canker. Keep up a constant temperature of 65° to 70° at night, rising to 75° or 80° with fire-heat by day, and to 85° by sun-heat, affording air very sparingly, and avoiding cold draughts by all means. Air should be taken off early in the afternoon, the plant being capable of standing much sun-heat without injury. Rub out all side-shoots from the stem till the trellis is reached. Cover the glass at night if frosty weather prevails, as it is both beneficial to the plants and economises fuel. Where a constant supply of water is required, a few seeds may be sown the next fortnight. Where pots are used, roots can often be found for a plant in Pine-pits, and the fruits thus obtained often prove useful additions to the dessert.

THE FLOWER GARDEN.

By CHARLES HERBIN, Gardener, Drogheda, Maidenhead.

Planting.—The planting and transplanting of trees and shrubs not having been delayed by severe frost up to the time of writing, is in most localities in a forward state, but if these operations have been delayed from other causes they should be pushed forward whenever the ground is not frozen or too moist. Although, as we all know, deciduous plants are the better for being planted in the early autumn months, they may yet be planted provided the work is properly done. A light soil resting on a porous subsoil soon gets rid of its moisture, and on such soils planting need not be long delayed after rain has ceased to fall. It is, however, different with tenacious soils, and these must not be touched till they have been dried by the action of the wind and sun. Evergreens may be left till the spring on any soil, unless the root-masses are large, and they can, from the nature of the soil, be kept intact. As a rule of general practice, plant these in early autumn, or in the month of April. In planting new subjects in old shrubbery borders or other parts of the garden previously occupied by trees and shrubs, the stations for the new plants should be wholly or partly renewed with fresh soil, and manure in a rotted state. If balls are not planted, the roots must be spread out at right angles to the stem, after removing the damaged portions. Cover these with a few spadefuls of the new mould, shake the tree, then add more mould, and some of the staple, if it be not too dry, and make the plant firm in the soil by lightly tramping it, fill up the hole, and allow for the subsidence of the soil by mounding it somewhat against the stem. Standard trees and large-headed bushes need to be staked and tied, the latter being done loosely, and the ground around afforded a mulching of rotten dung or partially-decayed leaf-mould.

Deciduous Flowering Shrubs for the decoration of a shrubbery may include the following, some being suitable for forming specimens, and all are fit for planting in shrubberies, on banks, &c. Of shrubby *Spiræas* there are *arifolia*, flowering in June, and for making a handsome specimen plant for the lawn; and although its flowers are not of a pure white, they are gracefully borne in drooping panicles. *S. Douglasii*, flowering in July and August, is rose-coloured; *S. Lindleyana* is a very distinct variety with large erect panicles of white flowers and handsome pinnate foliage; *S. confusa*, white, corymbose flowers, grows from 3 feet to 4 feet high, and is suitable for the front of shrubbery borders; and also *S. callosa* *alba*, 2 feet high, is not out of place in the herbaceous border. *Syringas*, commonly known as *Lilacs*, have received several noteworthy additions of late years, both in double and single flowered forms, and these chiefly of continental origin. These are well worth adding to collections where only the older varieties exist. Among the single flowered, *S. Souvenir de Louis Spath*, dark reddish-purple, is a very distinct variety; and *Marie Legraye*, pure white. *Madame Lemoine* and *Virginité* are good double flowered whites; *Léon Simon* has double flowers of a lilac colour; *Le Gaulois* is also double, and red-coloured. The *Philadelphus* should not be omitted. *P. coronarius* (mock orange), long an inmate of our gardens, is one of the most showy scented, while *P. grandiflorus*, although less marked in this respect, is a pure white, with larger flowers, and is altogether a desirable variety for shrubbery planting—and there are several other of lesser growth well deserving of attention. Standard *Thorns* may be used with effect, especially these with double flowers, in scarlet and pink, and other shades, should be found a place, the single-flowered varieties being also deserving shrubs. Among the earliest shrubs to bloom is the *Almond*, of which there are single and double-flowered varieties in colours varying from pale pinkish-white to rose and crimson. The *Prunella* of various colour, and the double forms of *Amygdalus persica*, *fl. pl.*, or double-flowering Peach.

CHRISTIES.—There is such a thing as analysis and such a thing as synthesis, and the study of each is of equal interest from the point of view of the student. It is not pleasant to think of the break up of old collections, whether of pictures or of plants, on the other hand it is satisfactory to see good things dispersed among the appreciative; and thus, we have no doubt, Mr. ROBERTS' forthcoming *Memorials of Christie's*, to be published by MESSRS. BELL & SONS at once, will be a work over which the connoisseurs will glaze with eager interest.

EDITORIAL NOTICES.

ADVERTISEMENTS should be sent to the PUBLISHER.

Letters for Publication, as well as specimens and plants for naming, should be addressed to the EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be WRITTEN ON ONE SIDE ONLY OF THE PAPER, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith. The Editor does not undertake to pay for any contributions, or to return unused communications or illustrations, unless by special arrangement.

Illustrations.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, &c.; but he cannot be responsible for loss or injury.

Local News.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

APPOINTMENTS FOR THE ENSUING WEEK.

MEETINGS.

TUESDAY, JAN. 12 { Royal Horticultural Society's Committee.

WEDNESDAY, JAN. 13 { (Renfrewshire Gardeners' Society meet

THURSDAY, JAN. 14 { Gardeners' Royal Benevolent Institution: Election of Pensioners at "Simpson's," Strand.

SALES.

MONDAY, JAN. 11 { English and Foreign Border Plants, Lilies, &c., at Stevens' Rooms, Tuberoses, Gladioli, Spiræas, Roses, &c., at Protheroe & Morris' Rooms.

TUESDAY, JAN. 13 { Azaleas, Calceoloths, Carnations, Iris, &c., at Protheroe & Morris' Rooms.

WEDNESDAY, JAN. 13 { 1000 English-grown Roses, Fruit Trees, Border Plants, Palms, &c., at Stevens' Rooms, 34,000 Japanese Lilies, Roses, Palm Seeds, Begonias, &c., at Protheroe & Morris' Rooms.

THURSDAY, JAN. 14 { Roses, Clematis, Gloxinias, Dahlias, &c., at Protheroe & Morris' Rooms, Trade Sale of Japanese Lilliums, at Stevens' Rooms.

FRIDAY, JAN. 15 { Azaleas, Dutch Bulbs, Roses, &c., Established and Imported Orchids, at Protheroe & Morris' Rooms, Microscopes and Miscellaneous Property, at Stevens' Rooms.

AVERAGE TEMPERATURE for the ENSUING WEEK, deduced from observations of Forty-three years, at Chiswick.—36°6'.

ACTUAL TEMPERATURES: LONDON.—January 6: Max., 48°; Min., 36°. PROVINCES.—January 6: Highest Temp., 51°, Scilly; Lowest, 40°, Shelburn.

The Persian Cyclamen. In a recently-issued number of the *Journal de la Société Nationale d'Horticulture de France* we find

a very interesting and useful paper on the cultivation and mode of growth of the Cyclamen, by MM. ALEX. HÉBERT and GEORGES TRUFFAUT, from which we extract what follows as likely to be of interest to our readers.

The first Cyclamen from Palestine was imported into France, at Lille, in 1734, and which attracted such attention, that a single plant was purchased by the well-known amateur florist, the Monk REYNTKENS, of the Abbey of St. Peter at Ghent (Belgium), for the large sum—for that period—of 65 francs. From this plant have been derived for the most part the innumerable varieties of Cyclamen which now everywhere abound.

At the end of the sixteenth century these plants were in great demand, but they eventually went out of fashion until the early years of the present century. In 1844, M. DE JONGHE of Brussels published the first monograph of the genus, with details of its culture. In France, about the year 1849, a distinguished horticulturist, M. FOURNIER, exhibited plants

of Cyclamen of many distinct forms, and brought it more extensively before the public. The late CHARLES TRUFFAUT, in his establishment at Versailles, developed and improved the varieties immensely, raising more than 2000 plants annually; but they again went out of demand until the years 1876-78, when a special effort was made in France to bring them to the fore once again, since which time they have held a worthy place in most horticultural establishments.

In its natural habitat the Cyclamen of Persia is met with in temperate regions, in mountainous and dry situations. They grow by preference in sandy-loams that contain a certain amount of humus, but they cannot thrive if stagnant water exists in their vicinity. Normally, their blossoming takes place in the spring, and usually it occupies three years to mature the plants, but by improved methods of culture, the Cyclamen is made to produce its flowers in one year, which is of great advantage from a commercial point of view. But the authors say this rapid method of obtaining fine plants is no easy matter, as they are very capricious in their habits.

In order to learn something of the food requirements of the Cyclamen, and the best methods of developing the genus, the authors submitted sixteen plants of *C. persicum* (pure white) to chemical analysis. They had been grown in a cold-frame in a mixture of leaf-mould and sandy-loam, and had been watered during the period of active growth with a weak solution of cow-dung manure.

The following are the results:—

Organs.	WEIGHT OF PLANTS, DIFFERENT ORGANS, IN GRAINS.	
	In fresh state.	In dry state.
Flowers	7.06	0.75
Leaves	22.68	2.25
Stalks	39.62	3.00
Tubers	23.96	2.62
Whole plants	93.43	8.62

Chemical Composition.—Per Cent.

Organs.	Dry Substance	Nitrogen.		Ash.	
		In fresh.	In dry.	In fresh.	In dry.
Flowers ...	10.6	0.209	1.98	0.996	9.40
Leaves ...	9.9	0.340	3.44	0.651	6.58
Stalks ...	7.5	0.141	1.89	1.261	16.22
Tubers ...	11.3	0.153	1.36	1.730	15.31

Composition of the Mixed Ashes of the Cyclamen.

	Per Cent.
Silica	17.30
Chlorine	7.94
Sulphuric acid	7.15
Phosphoric acid	6.22
Oxide of iron and alumina	10.60
Lime	4.36
Magnesia	3.32
Potash	23.30
Soda	12.82

These figures show that the Cyclamen in regard to their chemical composition approach very near to the terrestrial Orchids. They contain a considerable proportion of water, more than 90 per cent., and relatively to other plants but little ash or mineral matter, and not much of the element nitrogen. The analysis of the ash shows that it is particularly poor in phosphoric acid, but rich in potash, and somewhat less rich in soda. They appear to be the poorest in phosphoric acid of any plants yet examined except Ferns, and very low in lime and magnesia.

From the data thus given it appears that the Cyclamen is not very exhausting in its effects upon the soil for either nitrogen or mineral ingredients. At the same time the authors feel assured that a careful selection of soils will do much to meet the food requirements of these

plants. They have further tried the effects of various artificial manures upon the Cyclamen, but hitherto with not very satisfactory results. They experimented with plants of a "good" and of a "bad" strain. The relative weights of the various organs of the two different series of Cyclamen were as follows:—

Organs.	Weight in Parts per Hundred.	
	Good Strain.	Bad Strain.
Flowers	7.64	1.96
Leaves	24.54	34.32
Stalks	42.87	39.22
Tubers and Root-fibres	24.95	24.50

It is thus seen that the principal difference between the good and the bad strain is in their proportion of blooms, the good having the best flowers, while the bad yields the largest percentage of leaves.

The chemical analysis of the inferior Cyclamens showed that they did not differ very materially from the well-grown plants. They contained a little more nitrogen, more chlorine, magnesium, and soda, but less of silica and potash.

The cause of failure in Cyclamen culture is therefore put down by the authors to unsuitable soils, and that there is a danger in the composts used being too rich, which would favour a too rapid formation of vegetable-tissues, and hence lead to leaf-growth instead of blooms.

The question of watering, the authors consider as very important, chalky waters being thought to be particularly harmful.

The general conclusions are that—1. Under the influence of forcing manures the Cyclamen increases in total weight of plant, but the foliage is encouraged at the expense of bloom-formation.

2. Successful culture can only be attained by a suitable selection of soil, which should be leaf-mould with a mixture of sandy-loam.

3. Should the plants look sickly, they will be benefited by being watered near the roots with a liquid-manure containing a quarter of an ounce each of nitrate of soda and iron sulphate to 2 gallons of water.

We have received from Mr. WOOD a reply to Mr. DOUGLAS' letter in our last issue, but in

view of the probability of further correspondence on the subject we think it better to postpone the publication of Mr. WOOD's letter till others have had the opportunity of expressing their opinions. We hope they will do so as tersely as possible. Gentlemen who send us numerous sheets of manuscript can hardly be aware of the fact that each week we receive far more "copy" than could be possibly inserted were the *Gardeners' Chronicle* doubled or even trebled in size. Mr. T. H. SMITH obliges us with long communication in which he expresses the opinion that some project of the kind ought to be started, and goes on to propose the establishment of a "Queen Victoria Horticultural College." His scheme involves the establishment of a "theoretical and practical training college, a horticultural institute, a home for visitors interested in and following the profession, and a medium for giving to the public displays of horticultural merit periodically throughout the year." Mr. OLLERHEAD puts forth another scheme at p. 32 with reference to a 300-guinea cup for *Chrysanthemums*! We reserve the expression of our own opinions on these and cognate schemes for a future time.

CIRRHOPELALUM MEDUSÆ, LINDL. — Our illustration (fig. 6) gives a representation of this very fine Malayan species (the *Bulbophyllum* *Medusæ* of Reichoubach), which was prepared from a photograph of a specimen that flowered recently in the collection of Sir Trevor Lawrence, Bart., Barford, Dorking (gr., Mr. W. H. WHITE). Although (as a note published in the *Gardeners' Chronicle*, April 2, 1842, p. 223, well indicates) the plant has been in cultivation for many years, it has always been rare; and probably during the whole of the time that it has been known, no such plant as that now illustrated has been flowered. It will be

there are no absolute marks of distinction between *Cirrhopetalum* and *Bulbophyllum*, the two genera being kept up for convenience sake, and to avoid the confusion that would arise if they were amalgamated.

ROYAL HORTICULTURAL SOCIETY.—The first meeting of the Royal Horticultural Society in 1897 will be held in the Drill Hall, James Street, Westminster, on January 12, from 1 to 4 P.M. On or before that date, the Society's new book of arrangements, containing particulars of the shows, lectures, committees, &c., for 1897, and the report of the Council, and new list of Fellows, will be issued.

seconded by Mr. CHILD, the Mayor (Mr. C. W. DYSON PERRINS) was elected Chairman of the Executive Committee. Subscriptions were announced from several new members. Other business of a routine nature having been disposed of, Mr. YOUNG called attention to the fact that many gardeners in the district were members of the institution but not of the auxiliary, and suggested that some steps should be taken to bring them into it, but nothing was decided upon.

—The fifty-eighth annual general meeting of the members of the Gardeners' Royal Benevolent Institution will be held at "Simpson's," 101, Strand, in the



FIG. 6.—CIRRHOPELALUM MEDUSÆ: FLOWERS PALE YELLOW.
From the collection of Sir Trevor Lawrence, Bart., President of the Royal Horticultural Society.

seen that the inflorescence consists of a number of flowers, to each of which the two lateral sepals are elongated, the whole forming a head, which caused Dr. LINDLEY in his description to remark—"Certainly if ever there was a Medusa, this must be the prototype, before her Gorgonship's beautiful tresses were changed into serpents, nor are wanting the scales with which her form was safely guarded. It is an evergreen species, with creamy-white or pale yellow flowers, and it requires to be grown in a warm, moist house; and, although after the pseudobulbs are fully made up, it is benefited and rendered more certain to flower by water being given rather sparingly for a time, it does not require drying-off in the ordinary acceptation of the term. In the *Flora of British India*, v., p. 757, Sir JOSEPH HOOKER places this plant under *Bulbophyllum*, though he ad-

GARDENERS' ROYAL BENEVOLENT INSTITUTION.—The first annual meeting of the Worcester and District Auxiliary of the Gardeners' Royal Benevolent Institution, was held on Saturday, Dec. 19, at the Guildhall, Mr. R. C. SMITH CARINGTON in the chair. The balance-sheet for the year showed that the receipts were £175 9s. 6d., and the expenditure £172 5s. (£164 15s. of which has been sent to headquarters in London), leaving a balance in hand of £3 4s. 6d. The committee, in their report, expressed their sincere thanks to those who had given such handsome donations to the branch, and especially to Earl BEAUCHAMP for kindly allowing his gardens to be thrown open for the benefit of its funds. On the proposition of Mr. CRUMP, seconded by Mr. HURLESTONE, Earl BEAUCHAMP was re-elected President; and on the proposition of the Chairman,

County of Middlesex, on Thursday, January 14, 1897, at 3 P.M., for the purpose of receiving the report of the committee and the accounts of the Institution for the present year, electing officers for the ensuing year, and other affairs; and also for the purpose of placing twenty pensioners on the Fund, ten of whom come in under Rule III. s. 5, and ten by the votes of the subscribers. The usual annual friendly supper will be held at 6 P.M., after the business of the meeting has been disposed of, H. E. MILNER, Esq., F.L.S., in the chair. Friends of the Institution who may wish to be present at the supper should forthwith communicate with the secretary, Mr. GEORGE J. INGRAM, 50, Parliament Street, S.W.

MEMORIAL OF THE QUEEN'S REIGN.—The subject for discussion at the next meeting of the Horti-

cultural Club on Tuesday, Jan. 12, at 6 P.M., at the Horticultural Club Room, Hotel Windsor, Victoria Street, will be "Proposals for a Horticultural Memorial of the QUEEN'S REIGN."

MR. HARMAN PAYNE.—The Council of the National Horticultural Society of France at a recent meeting held in Paris, elected Mr. HARMAN PAYNE a corresponding member of the Society, in recognition of his services to horticulture.

JOTTINGS FROM KEW.—"Gardeners'" plants have made a fine display in the Royal Botanical Gardens, Kew, during the past few weeks, and we may instance the *Chrysanthemums*, *Michaelmas Daisies* in pots, the fragrant and feriferous *Marguerite-Carnations*, the vividly-coloured *Salvia splendens*, besides others, as S. Bethell and S. leucantha, all of which are worthy of high culture where roomy greenhouses and conservatories have to be made gay at this season. The beautiful Himalayan *Luculia gratissima* is showing fine heads of its white and pink sweet-scented flowers, which will continue to open in abundance for several weeks longer. *Tecoma Smithii* has been flowering in small examples in 5-inch pots. These plants, growing about 2 feet in height, and being furnished with good heads of orange-coloured blossoms, are most desirable additions to greenhouse decorative plants at the winter season. The plant flowers in from 6 to 8 months from seed. Brief mention may be made of the many beautiful *Bouvardias* in flower, of *Eupatoriums*, *Begonias*, and *Rhododendrons*.

THE DEVON AND EXETER GARDENERS' ASSOCIATION held its annual supper on New Year's Day. Owing to the inconvenient date, which was unavoidable, the number of members present was not equal to that on most former occasions. Considerable enthusiasm distinguished the proceedings.

THE TRENTHAM AND HANFORD Horticultural Society's Show for 1897 has been arranged to take place on Thursday, July 22.

GREAT BRITAIN'S CEREAL CROPS.—The Board of Agriculture has just issued a leaflet entitled, "A Preliminary Statement showing the Estimated Total Produce and Yield per Acre of Wheat, Barley, and Oats in Great Britain in the Year 1896, with Comparative Statements for the Year 1895, and for the Average of the Ten Years 1886-1895." It appears from the figures that the estimated total produce of Wheat in Great Britain in the present year was 57,052,952 bushels; the total for 1895 was 37,176,237 bushels. The acreage for this year is 1,693,957, against 1,417,483 in 1895. The estimated yield per acre was for the present year 33.68 bushels, against 26.23 for 1895. The average of the ten years, 1886-1895, is 28.81 bushels. Coming to Barley, and under the same conditions, we find the estimated total produce for 1896 put at 70,774,776 bushels, against 68,650,945 bushels last year. The acreage for the present year is 2,104,764, against 2,166,279 in 1895. The estimated yield per acre for the current year is 33.63, against 31.69 for 1895. Average of the ten years, 32.68 bushels. Oats were estimated at 114,015,907 bushels for 1896, and produced 122,148,628 bushels last year. Acreage, 1896-3,095,488, against 3,296,063 last year. The estimated yield per acre for the present year is 36.83 bushels, for last year 37.06 bushels. The average of the ten years, 1886-1895, is placed at 35.23 bushels. These figures, we think, will be found of much general interest.

GENERAL EXHIBITION AT HAMBURG, 1897.—We learn from the third supplemental programme, issued by the authorities, that a special scientific section has been decided upon, which in regard to its more important divisions will be opened on May 28, together with the first special exhibition, and kept open till the close of the general exhibition, towards the end of September. The chief features are (1), the diseases of cultivated plants occasioned by atmospheric conditions, by the nature of the soil,

and those of a mechanical nature. This section will include wounds and their treatment, grafting, budding, etiolation, bark canker, frost canker, frost wounds and cracks, injury by storms, hail, lightning, smoke, chlorosis, dwarfing, &c.; (2), the animal and vegetable foes of horticulture and fruit culture, with reference to the difficult question of the boundary line between agriculture and forestry; (3), the diseases, malformation, and destruction caused by these foes of cultivated plants, and the remedies and preventive means employed against them. The creatures and plants useful to vegetation: (a), the more important insects instrumental in the fertilisation of flowers, together with examples of their activity in suitable preparations, models, pictures, &c.; (b), useful root fungus (tubercles of bacteria, mycorrhiza); (c), the chief foes of the insects injurious to plants, and fungi which destroy insects; (4), monstrosities and deformities of plants, union, gnarls, leafing, doubling, examples of how roots pierce hard substances; (5), comparative trials of the effect of manures on plants grown in pots, commencing on July 30, cultivation in feeding solutions; (6), wild forms of cultivated plants (dried or living); (7), exotic plants in pots of use in commerce, manufactures, &c.; (8), selections of the more important useful exotics in a preserved state (dried, in alcohol, &c.), as well as different parts and organs (flowers, fruits, seeds); (9), selections of plants and parts of plants (flowers, fruit, seeds, germinating plants, &c.), arranged according to morphological and biological standpoints; (10), results of scientific experiments in pollination, and when possible with the original species; (11), scientific adjuncts to instruction in horticulture: (a), the literature of gardening, that concerning the management of parks, fruit culture, injurious insects, and pollination of flowers by insect agency (the same being provided and set up by the committee); (b), pictures, models, microscopic preparations, photographs on glass, &c.; (c), pictorial or graphic exhibitions of the feeding properties of fruits and vegetables.

MR. JAS. CYPHER of Cheltenham, celebrated the attainment of his seventieth birthday on the 1st inst, when the *employés* of the nursery business of which Mr. CYPHER was the founder, met the members of the firm at a complimentary dinner. The company present numbered seventy-eight, and an enjoyable evening was spent.

BUDDING THE LEMON.—Theory and fact, which are so often opposed in fruit-growing, were diametrically opposite in the matter of propagating Lemon trees. Theorists, save a correspondent of *Garden and Forest*, argued that the best Lemons must necessarily come from trees grown from Lemon seeds, or from cuttings taken from Lemon trees. They saw an absurdity in budding the Lemon, which is a sour fruit, on to an Orange, the most desirable quality of which is sweetness. Yet this apparent contradiction is now universally practised in southern California, after years of discussion and experimentation. The Lemon does not come true to name from seeds, and buds which are grafted upon so Orange-root produce better fruit than buds grafted upon a Lemon-root. This was long a vexed question, and is a good illustration of the fact that experience alone can teach what is best in the growing of fruit.

PROPOSED BOTANICAL GARDEN FOR ABERDEEN UNIVERSITY.—At a meeting of the Aberdeen University Court recently, the Marquis of HUNTLY, Lord Rector, presiding, a communication was submitted from Dr. JAMES W. H. TRAIL, Professor of Botany in the University, representing that there is no provision within the University for teaching vegetable physiology practically in such a way as to enable students to study growing plants, and to observe the effects on them of experiments, or of varying treatment or environment. A botanic garden had for a number of years been included in the list of the more pressing needs of the University, issued year by year in the "Calendar." It had been rendered urgent and indispensable by the ordinance for degrees in pure science and in agriculture. He was

not aware of any other university or science school of far lower rank than the University of Aberdeen in which there is absolutely no provision to enable students to study living plants as affected by varying treatment. He suggested that such a garden should be provided, restricted to the cultivation of plants in the open air. The most suitable ground for the purpose, within convenient access of the University, would be the field to the west of the garden of the manse of the Professor of Biblical Criticism. It belonged to the University, was of convenient size, was easily accessible from Bedford Road, was sheltered from east, north, and west, and had a varied surface that would adapt it to the cultivation of plants of different requirements from very dry to very wet habits. Mr. NICHOLSON, the Curator of the Royal Botanic Gardens, Ken, concurred in the view that this field was the best available situation for a botanic garden, and that after being properly laid out and prepared it could be kept in order by one man, if restricted to open-air cultivation as proposed. The necessary expenditure might be estimated as:—Preliminary outlay: walks, sowing grass or turfing, rockeries, garden tools, &c., propagating-frames, and a tool-shed, amounting to, say, net more than £120; current expenses—rent, wages (say, 25s. a week), manures, labels, carriage of specimens, insecticides, and other petty expenses, amounting to, say £100 annually. [Surely, far too little! Ed.] For this, with rigid economy, a very useful and now urgently-required adjunct to botanical and agricultural instruction within the University would be provided. Dr. TRAIL added:—"My personal services in supervision and in endeavouring to ensure accuracy in the nomenclature of the plants, care in their cultivation, and economy in the management, would be very willingly given by me." The only hope of an early realisation of the scheme put forward by Dr. TRAIL lies in the suggestion thrown out by the Lord Rector, viz., that some public-spirited Aberdonian, with money at command, should come forward and give the useful assistance. The sum required for the endowment of the scheme is only a very moderate one—£3000 or £4000 would suffice. It is sincerely to be hoped the Lord Rector's suggestion will be acted on, and that it will no longer have to be said that so important and ancient a seat of learning as Aberdeen University lacks so important an adjunct to its teaching of botany as a botanical garden.

A CLUSTER OF APPLES.

It is not often that one sees a perfect cluster. More often than not, one or more of the infant Apples get squeezed out of existence by the encroachments of their bigger or stronger brothers. It was not so in this case; the terminal flower (in the botanical sense, not in that of the *Chrysanthemum* growers) arrived at its full development as the lateral ones. The specimen (fig. 7, p. 27) was grown in the north of Ireland, and obligingly forwarded to us by Mr. Percy Dickell.

HOME CORRESPONDENCE.

GREVILLEA ROBUSTA.—This plant is excellent for decorative purposes in the autumn and winter if seed be sown in March in a hothed with a temperature of 65° to 70° as a minimum, and the young plants gradually hardened before the summer is over, so as to stand a temperature of 40° to 45° minimum during the winter. I have some at the present time in 6-inch pots which are 2 feet high on single stems, and 2 feet in diameter of foliage, the latter being good to the base; it would be difficult to find more useful foliage plants, equally pleasing in character, that will stand a similar winter temperature. Previous to this season it has proved difficult to raise in quantity from seed, but I am very pleased with the last trial; possibly our seedsmen have discovered quicker means of transit, or an improved system of packing. Like all the members of this family, it likes a fair proportion of peat or other vegetable matter to grow in. *W. H. Divers.* [Do they not bloom with you? Ed.]

FLAVOUR IN APPLES.—Having read the remarks of "A. D." in the issue of the *Gardeners' Chronicle* for December 19, p. 762, I thought that I would send a few fruits of Apple called in this neighbourhood Spice Pippin or Brown Spice for your opinion. It is not a handsome fruit, but its flavour, I venture to think, places it in the front rank as a winter dessert fruit. The tree that these came from is at least seventy years old. [Mr. A. P. Barron, to whom we showed the fruits, remarks as follows: "The fruits are very highly flavoured, sweet and good. Flesh a little hard and dry perhaps." Ed.] *Thomas Finch, Giffords Hall, Stoke, Colchester.*

MARGUERITE-CARNATIONS.—These are fast becoming favourite flowers, making satisfactory returns in abundant bloom when well grown, and the strain is a good one. I noticed recently a truly fine healthy lot growing in one of the greenhouses at Waterbury Place, the seat of Alderman Davis, M.P., under the care of Mr. Neame, and not only were the plants well grown and with a wealth of bloom open upon them, but the size of the flowers was good, and they were double and fragrant. The seed, I am told, was sown early, and half of the plants (250) were grown on in pots, and the remainder planted outside and lifted in the early autumn months. Those which were in pots had been always much the earlier lot to come into bloom, while those taken up and potted, although they will be late, produced equally good results. There were very few single flowers amongst them, and the "grass" was stout and robust. *H. Markham.*

THE PEACH OUT-OF-DOORS.—Occasionally we find some able grower of hardy fruits giving his experience in these columns with the Peach, but they seldom touch the subject I am anxious to have their views upon, namely, whether the Peach should be secured with bast or fixed wires or with nails and shreds. Now, I consider this an important matter, especially to a gardener on first taking charge of a garden, when he is probably anxious to reduce the amount of labour expended in one direction to enable him to spend it in other directions. Only those charged with the work have any idea of the number of days required by two men to loosen from the wall, wash, and resail the trees on a Peach-wall of, say, 50 or 60 yards long. I possess three of the most useful gardening books, *Thomson's Gardeners' Assistant* (revised edition), *Nicholson's Dictionary of Gardening*, and the latest work on fruit culture, viz., *The Fruit Grower's Guide*, but in none do I find instructions for wiring walls; so one must conclude that the practice is not a general one. I know that the trees derive more warmth from the wall when nailed than when they are fastened to wires, as it is almost impossible to get the wire quite close to the wall. One would not advocate the use of wire in the colder parts of the country; but in the warmer south and western counties a wired wall would be unobjectionable, except, perhaps, on the score of expense. Such a wall pays for its outlay in a very few years, commencing in that respect favourably with nails and shreds, which cost much money every year. I would like to have the opinion of growers who may have their Peach-walls wired out-of-doors whether they get such good results as when nailing is practised? *James Mayne, Bickton, Devon.* (The wires should consist of thin galvanized iron fixed vertically, 6 inches apart, by means of eye studs driven into the wall nearly flush with the eye. This allows a space of, say, the diameter of the eye, one-tenth to one-eighth of an inch, to be ample, for passing behind it the bastor willow ties used, and really allows the branches of every size to touch the wall as closely as if they were nailed. The cost of the studs for the ends is a little more than that of common cast nails; and that of the studs used intermediately is rather less, these being smaller. Such wires do no harm to the shoots or fruits, last a quarter of a century, are easily removed when broken, and render the use of nails unnecessary. Ed.)

GROS MAROC VERSUS GROS COLMAN.—Would you kindly permit me to "dispute a short piece" on the Gros Maroc versus Gros Colman controversy, not that probably I have anything new to dilate upon, but my experience of Gros Colman dates from some thirty years since, hence I claim to know a little about this variety. At the outset of my horticultural career as an amateur, being then hardly out of my teens, I took to Grape-growing as a hobby, and for exhibition. I then grew something like twenty-eight different varieties, and amongst them Gros Colman was one. That particular Vine was presented to me by the late Mr. J. Pond of the Vineries, St. Lawrence,

Jersey, and was grown from a cutting from probably the first and original Vins of the variety then existent in the island. This was planted by Mr. Fenimore (the original proprietor of these vineries, and one of the pioneers of Grape and market-growing under glass in the Channel Islands) over forty years ago. The disagreeable early flavour of the variety as grown by me was the great drawback, as its imposing and noble appearance on a show-stand was the admiration of all. It never entered my head at the time that allowing the bunches to remain on the Vine after colouring would improve the flavour, but such is undoubtedly the case, and is the grand secret. In former years flavour ruled the day in the estimation of Grape connoisseurs, not so unfortunately in the present day, when a change has come o'er the scene—everything now in the fruit line must be fine and large. Quality is entirely a secondary consideration. There is no doubt, however, that the culture of Gros Colman is better understood, and the longer the bunches are left on the Vine, even after colouring (which process takes about three months to perfect), the better the flavour. Having also grown it worked on Black Hamburg, I can vouch for its superior excellence when so grown. Some three years since I was assisting to judge the Grape classes at a local show, and I then tasted a sample of Gros Colman, which, to my mind, was as good as anything in the Grape line, barring Muscats, that could possibly be. The bunches in question were grown by Mr.

likely early Grape to succeed on the above-mentioned stocks. Madresfield Court would also do fairly well engrafted on the same stocks so far as size and the colour of berries are concerned; but with a prospect of the flavour of both Black Hamburg and Madresfield Court being impaired by the influence of the stock. Gros Maroc and Gros Colman I know by experience not only do well inarched on Black Hamburg Vine, but the flavour is improved thereby, and I see no reason why Black Alicante, Alnwick Seedling, Lady Downes, Gros Guillaume, and Mrs. Pince's Black Muscat should not do equally well when worked on the Black Hamburg stock. Madresfield Court might also be employed as stock for late black varieties of the Grape-vine, with every prospect of putting more flavour in the fruit. As a matter of fact, all black Grapes, excepting Madresfield Court, Muscat Hamburg, and Mrs. Pince's Black Muscat, are improved in flavour by being engrafted or inarched upon the Black Hamburg Vine; and the same remark applies with equal force to all white varieties when worked on the Muscat of Alexandria stock. Foster's Seedling, Golden Queen, or Mrs. Pearson might be engrafted upon the Buckland Sweet-water Grape-vine. In the matter of engrafting one variety of the Grape-vine upon another, it is always well to first consider what character of fruit the result of such a union or union of stock and scion will produce. I once inarched two young shoots of Gros Maroc from a pot-Vine—one upon a variety I had sent me from Malta, and the produce of which (purposely obtained the first year after planting) was very poor in every respect; and the other upon an adjoining Black Hamburg. The Grapes resulting from the former union were so altered by reason of the influence exercised on the scion by the foreign stock, as to be unrecognisable by several Grape-growers, who saw them side by side, both on the Vines and in the Grape room, with the produce on, and obtained from the Gros Maroc, which was worked upon the Black Hamburg, and which was easily recognised. The berries were, however, not quite so oval as those produced by the Gros Maroc Vine on its own roots. I need hardly state that the said foreign stock and scion were rooted out of the Vine border forthwith, whilst the Gros Maroc on the Black Hamburg stock has borne crops of good Grapes ever since; although, as stated on p. 728, it evinces a disposition to produce insufficient bunches for a crop each succeeding year, in the course of five or six years' full cropping—some years more, and others less. The above-mentioned facts of thoughtless selection—or rather attempt to make use of the Grape-vine as a stock for one desired to be increased, has not been forgotten by the writer, who communicated the facts to the *Gardeners' Chronicle* at the time. *H. W. Ward, Litch House, Rayleigh, Essex.*

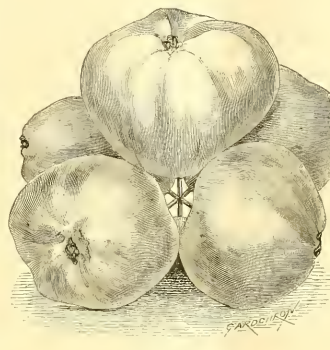


FIG. 70.—A PERFECT CLUSTER OF APPLES. (SEE P. 26.)

Boobyer, gr. to Mrs. Dray, Highfield Vineries, St. Saviour's, Jersey. The berries were not over large, but the colour and finish were good. I have invariably found that large (enormous, I may say) berries, measuring about 4½ inches in circumference, such as are often witnessed at shows, are deficient in flavour. This, I think is due to overfeeding. Now as to Gros Maroc, I grew it for several years, but discarded it for its shy-bearing propensities; and for I found, that to produce anything like a crop, the long-rod system had to be resorted to, or the spurs had to be left long, some three or four eyes. Mr. M. Temple states that he has grown Gros Maroc for years, and always found it crop capitally. This appears to me strange. May be the northern climate suits it better than these more southern regions. As regards the point at issue, that which is the better-flavoured Grape of the two, I opine, that eaten at the same stage, neither being allowed to remain on the Vine after being fully coloured, Gros Maroc, without a doubt, is the better-flavoured. Moreover, it colours in one-half the time, and hence is fit for table much sooner; but as a market variety, with the present craze for size and appearance, as also for cropping, commend me to Gros Colman, despite its liability to spider. *P. F. Le Sacre, Jersey.*

GRAPE VINES.—In answer to "T. S.'s" inquiries at p. 733, last vol., as to what early varieties of the Grape-vine are likely to succeed when inarched upon Gros Maroc or Gros Colman, if any late ones have been known to succeed when inarched upon Black Hamburg, and also as to whether Buckland Sweetwater is useful as a stock for other varieties? I am enabled to inform him that Black Hamburg is the most

CYCLAMEN AND ITS CULTURE.—I have noticed during the past few weeks many notes in the *Gardeners' Chronicle* respecting the behaviour of the Cyclamen. If plants are wanted for exhibiting at spring shows, such as the Royal Botanic, Crystal Palace, &c., the seed, which must be obtained from a good source, should be sown quite eighteen months before the plants are wanted, and August is the best month for sowing. Sow the seeds in pans of 9 or 10 inches diameter, half filled with crocks, in a compost consisting of three parts fibrous loam, free from wire-worm and other pests, one part leaf-mould, and a small quantity of silver sand. Place the seed pans in a pit having a temperature of 70°, and when the first leaf is visible, that is in about one month from time of sowing, they should be pricked off into other pans or pots, care being taken to afford them plenty of drainage. While in this stage, the stirring of the soil to aerate it will help them on. When the third leaf shows, they are then ready for 3-inch pots, and by the time they have reached this stage, the sun will be getting rather warm about mid-day, when the plants should be slightly shaded, as if exposed to the sunshine the foliage will become soft—in fact, the plants will be seriously checked. After they have been potted in 5-inch pots, the temperature may be reduced to 60°, with plenty of air afforded in fine weather, and at this degree of warmth they may be kept till they are wanted for flowering. Re-potting may be continued till they come into 8 or 10-inch pots. It will then be time to let them throw up their flowers. During the growing season, they will require fumigating at least once every week to destroy green fly and thrips, for if these be not kept under the flowers will be deformed. In the majority of cases of disappointment in not getting flowers of good quality, it is because these plant-plagues are allowed to cripple the young buds. When the plants

are put into their flowering-pots, a little soot-water afforded once a week is beneficial. If not quite forward enough by the time they are wanted, they can be put in a temperature of 75°, with plenty of air when the sun is warm, for if the air is damp at that degree of warmth, the buds will damp-off. If wanted for marketing purposes, the above treatment will ensure the grower some first-class stuff, only the pots will not need to be larger than 6 inches. I will give a full account on the growing of seed, and old buds, in some future issue. *Charles White, Stevenage, Herts.*

CYCLAMENS AT NOSTELL PRIORY.—Judging from numerous letters which have appeared in the *Gardeners' Chronicle* about Cyclamen blooms falling to open, it must be a common thing. The best grown lot of Cyclamens that I have seen lately is growing at Nostell Priory Gardens. Mr. Easter, the gardener at that place, told me, on enquiring how he managed the plants, that the seeds were sown in the autumn of 1895, and kept gently on the move during the winter, with shifts when needed, and finally coming into 5 and 6-inch flower-pots. The compost used consisted of good loam, leaf-mould, and a sprinkling of sharp sand. In June the plants were placed in a cold frame under the north wall for the summer. They are at present standing in a greenhouse where a temperature of 45° to 50° is maintained, and nothing more satisfactory could be desired. *J. T.*

CHILIAN BEET AS A WINTER DECORATIVE PLANT FOR THE GREENHOUSE AND CONSERVATORY.—At our local harvest festival we helped to decorate the church by putting up a number of plants of Chilean Beet. Being only intended for temporary service, small pots were used, and the show was gorgeous; when no longer required, they were brought back for the sake of the pots, but as they showed no signs of fading they were distributed about the conservatory, where they still remain, and where they are likely to remain, retaining their colouring so perfectly that we have to partially hide them behind the greenery to prevent them spoiling the effect of the comparatively insignificant Roman Hyacinths, &c. It is probable that these would make first-rate market plants for decorative cold passages and entrance halls, and we would have tried the experiment on a larger scale this winter, but for the fact that we were so pressed by our friends for them that we had to give three-fourths of our stock away, and refuse a great many more applications than would have exhausted our stock twice over. *Thos. Fletcher, Grappenhall, Cheshire.*

GROS COLMAN GRAPES.—I was much pleased to see in a recent issue a paragraph from Mr. Bates, anent the above Grape, weight of annual crop, &c. I should be obliged to Mr. Bates, as would other comparative youngsters (I feel certain), if he would give us a description of his method and system of culture, not only of Gros Colman, but also the other varieties grown at "The Heyes." Knowing the very limited borders (all inside) at that place, I feel sure Mr. Bates will somewhat surprise Grape-growers at the results he has for some years obtained, not only with Gros Colman, but also with Muscats and Lady Downes. The two latter have been grown in borders of about 4 feet 6 inches by 2 feet 6 inches deep, if I remember rightly, and with such success that they have obtained prizes at Trentham and Salop annually I believe. I should like to ask Mr. Bates, if he considers outside borders necessary in any case, and for Grapes of any season? I must apologise for diverging, but seeing Mr. Bates has emerged into print, I take the opportunity to ask him for some further revelation as to his ways and means of obtaining such results, not only as regards "Gros Colman," but other Grapes which have been exhibited by him. *Ciectrician.*

HUYSH'S VICTORIA PEAR, ETC.—In a recent issue of the *Gardeners' Chronicle*, at p. 11, "J. C." writes:—"Huysh's Victoria and Bergamot Pears are grown here as standards, and are very prolific." This is very indefinite, and many gardeners would like to have, in this case as well as in all others, something precise as to the locality meant by the writer. *J. E., Nostell Priory Gardens.*

A PERENNIAL TOMATO-PLANT.—Referring to Mr. Joseph Meredith's letter concerning the fruiting of a Tomato-plant for several years in succession, I may remark that in the autumn of 1889, I was having a house 65 feet long cleared of Tomato-plants, and one plant, about in the centre of the house, appeared so vigorous that I decided upon leaving it untouched where it stood. The house was forced during the

winter, and the plant made good growth, and the shoots were trained right and left to the wires, till the greater portion of the roof was covered with them. I began to cut ripe fruit in the month of April, and the plant continued to fruit the whole of that season, several hundred lbs. being cut from it. This particular plant was a seedling of mine, similar in character to the true type of Hackwood Park Profic of the present day. Grown in the ordinary restricted manner, the blooms failed to set satisfactorily, but when allowed to ramble at will close to the glass they set well. The fruit was round, and the entire crop of them on this plant came of a marketable size. It was considered by those who came to see it a great curiosity. The plant possessed a single stem. *P. P. Le Sueur, Jersey.*

FRUIT-GROWING IN THE METROPOLIS.—What very fine examples of fruit have been exhibited recently from gardens in the metropolitan area! In illustration may be mentioned the exhibits of that painstaking young gardener, Mr. W. Taylor, at Tewkesbury Lodge, Forest Hill, and the many successes he has achieved, notably 1st in Champion Class for Grapes at the Royal Horticultural Fruit Show at the Crystal Palace, 1st in Champion Class for Grapes at the National Chrysanthemum Society's Jubilee Exhibition, and several other prizes, not forgetting the grand collection exhibited at the November meeting of the Royal Horticultural Society at the Drill Hall, James Street, Westminster. The Peaches and Grapes exhibited at the July Meetings of the Royal Horticultural Society by Mr. Kelf, gardener at St. John's Villa, Regent's Park, were fine specimens of high culture, and deserving of all praise. So that with all the disadvantages attendant on gardening in London, the fruit grower at least can hold his own against the more favoured provincial cultivator. *John Curville, P. K.H.S.*

HOME-GROWN AND AMERICAN FRUIT.—In "A. D.'s" remarks on the above subject in a recent issue there is a great deal of truth, and growers should remember and put his suggestions into practice. The colour and clearness of skin in fruit, always appeal to the ordinary purchasers, who sometimes wish they have no need to do so. One large fruit-grower, an acquaintance of mine, says there is more in the colour and appearance of the fruit to recommend it than in flavour, the latter being sought for by the few, but the people in general regard most the colour and price. It is not very enticing when the would-be buyer sees a mixed lot of Apples or Pears, some large, some small, some ripe, others half-ripe, or may be rotten, tumbled anyhow into a basket. It is true we still have something to learn from the foreigner in gathering, grading, packing and marketing fruit; and I believe that such can be made by selling good fruit well packed. *S. H.*

WOOD-ASHES are used here for many purposes in garden and field, and are I consider, good fertilisers. We use a good deal of wood as fuel in one place every day, the fire being on an open hearth, and long and large pieces of wood are burned, the fire-place being 9 feet wide, a circumstance that saves much labour in sawing. At this season of the year we employ a small quantity of coal (as sometimes the wood is green), unless we have been upon the chimney to dry, wood is then chiefly used, but it is no detriment to the bacu to use a little coal. We put pieces of wood 5 to 6 feet long, and 6 inches diameter, on the fire, so there is much saving of labour, time, and of waste, compared with what wood prepared for a grate would require. It may cause perhaps some doubts in the minds of some as to the size of the fire-place, but being built some hundreds of years ago, when wood was the only fuel used, it was very convenient to feed the fire with long pieces. *J. C., Blewbury.*

LATE CHRYSANTHEMUMS.—The following late-flowering Chrysanthemums amongst many others may be depended upon to give satisfactory blooms about Christmas time and the New Year:—Golden Gem, J. S. Bibbes, L. Isere, W. W. Coles, Lady E. Sanders, Peter the Great, Ethel, Lord Brooke, Geo. Daniels, Marie Hoste, Duke of York, Cecil Wray, W. H. Lincoln, Julie Lagravre, President Borel, Madame Carnot, Silver Clond, Mr. W. G. Whittle, G. C. Schwabe, Primrose League, H. Neve, Miss A. A. Haggas, Mr. W. W. Clarke, Fair Maid of Guernsey, Inter-ocean, Grandiflorum, Princess Victoria, A. O. Adams, and the single variety, Mrs. Langtry. The above varieties were very good here on January 1, and some had been used for Christmas and church decorations; Peter the Great, Ethel, and Julie Lagravre are excellent. *B. Hudds, Birdsall.* [Accompanying this communication there came a box of

blooms representing a number of the above varieties. At such a season their usefulness is beyond doubt. Ed.]

HOW TO CLEAN LAND OF COUGH-GRASS.—The best, cheapest, and quickest method to get rid of this noisome weed is to steam cultivate the land when dry, doing it both ways at about 5 inches deep, or more if this be required, and then well drag it first with coarse drags, and gather up into heaps and burn, and then harrow again with finer tined harrows, and afterwards harrow it as often as possible, and continue to burn all that can be collected. After you have got it clean, give a guinea per pound for what remains. I planted Barley in May after cleaning the land, as much as time would permit as it was getting late, and I had a good crop after, only ploughing, dragging, and harrowing the same. The pieces was divided into two parts for experimental purposes, and this was laid after being cultivated in June, and in the manner stated above, it being full of what the course producer, "Charlock &c." This was mown and got off the land before seeding, and used as litter, burnt and in other ways destroyed. The land was then ploughed and planted with Wheat, and this pronounced by agriculturists to be the best piece of Wheat in the neighbourhood; and being close to the Queen's highway it was open for inspection and criticism, as this is the age for that. This piece of land was full of Couch-grass, just like a hayfield after being dragged. I am sorry to say that I was insane enough to take to several acres of land adjoining my own, and its condition was similar to the above piece, and worse than I thought; but I have mastered it, and trust to have a good field when I thrash out the crop. My own land gets the post from the adjoining field, but by giving one guinea per pound for what you can cure it. The question is asked, does land deteriorate? My answer is, Yes, by starvation and poor culture; and No, if fed off with corn clean. My own land has been planted with corn ever since I can remember, viz., Wheat, Barley, and Beans the same every third year, and I never heard my father say anything different, never followed or planted with roots, and only treated as above. I am in my 66th year, and my father was aged 78. *J. C., Blewbury.*

THE WEATHER IN SCOTLAND.—In the north the autumn was one of the most sunless I ever remember. Although the weather was comparatively mild, fruit trees were long in casting their leaves; but fruit-buds appear to be abundant. Mild weather at that season is not favourable to the ripening of the wood, or conducive to fruit-bearing the following year. Our thermometer indicated 52° on New Year's eve. *M. Temple, Carron, Strathgishrie.*

SOCIETY.

THE POTATO TRICENTENARY.

(Continued from p. 13.)

THE RAISING OF NEW VARIETIES.—MR. ARTHUR SUTTON, in speaking on this subject, said:—

In attempting to effect an improvement in the cultivated form of the Potato, it is found that the old rule "like produces like" does not in this case hold good, and the development of the Potato being restricted by such a limitation, it is probable that our present supply would resemble in character that of which Gerarde wrote three centuries ago. I need scarcely remind you that Potatoes are more enlargements of underground stems, and that the thickened, in which starch is stored up in smaller or larger proportion, according to the characteristics of the several varieties. Like other underground stems, the tubers possess buds or eyes, from which, by fresh shoots, the plant is capable of redevelopment. It will therefore be obvious that improvement by selection of the tubers is impracticable. Anyone can demonstrate this by planting a tuber which from any cause may be misshapen. The produce will revert to the uniform type of the variety to which it belongs. The only modification of this rule I am acquainted with is in the cases where all the tubers of one plant show a uniform divergence in character, either for better or worse, accompanied in the foliage by a corresponding divergence from the type. When this is so it is possible that, by planting these tubers and continuously selecting the plants during growth, a slightly different Potato might result, as in the case of some types of the Ashleaf section, which are broader and more compact than others, and of *versel*. Outside the Ashleaf class, however, I know of no such instances. A really first-class seedling Potato is not liable to degenerate so quickly as is generally supposed. If degeneration sets in soon after its introduction, it merely proves that the variety is one which ought never to have been brought to public notice.

POTATO DISEASE.—At the present time the Potato fungus is fought by two methods, differing fundamentally in principle. By the system originated in France an effort has for some years been made to fortify the plant against the attacks of the Phytophthora, or Peronospora. The crop while growing is either sprayed with the liquid Bordeaux Mixture or with a B mixture, or else dusted with a powder consisting of similar chemical constituents. In the elaborate series of experiments conducted in conjunction with Professor Grenner, of the University Extension College, Reading, in 1895, we found that in the first and second early varieties no advantage was gained by spraying. The crop combined the best of both worlds, and the soil under the plants, and the dressing did not appreciably lengthen the period of growth; in fact, there was an actual loss on the sprayed plots. During the past season—1896—these experiments were continued, with the result that in the case of a late main crop Potato there was a gain of 6 cwt. 2 qrs. 4 lbs. per acre; but exactly the same spraying applied to the White Elephant Potato gave a loss of 12 cwt. 2 qrs. It is, therefore, a question whether in the majority of cases there would be sufficient additional weight per acre to compensate the grower for the somewhat laborious task of spraying his crop every time that the Irish or French varieties are sown. However, point out that the soil of the experimental grounds is very light and porous, and that the climate is dry; and I consider these facts account for the different results obtained where spraying has been carried out on heavier soils under winter conditions.

Another system attempting to render the Potato crop less liable to disease by raising and distributing seedlings having a robust constitution, capable of resisting the attacks of the fungus. In this system I have for years taken a deep interest and it occurred to me that it might be possible to succeed in popularising this branch of experimental work, especially if aided by the illustrations of various stages in the history of the experiment I have conducted. To these a few examples of related species are added.

Those who attempt to raise seedling Potatos must possess abundant patience. Like many other species which are not habitually multiplied by seed, the Potato has a remarkable tendency to revert to the wild form. It may be necessary to select 100 or more seedlings before finding one which is really worthy of a place among the better varieties already existing. M. de VILMORIN says that in France the raising of seed Potatos has been proceeded with in a somewhat haphazard manner, while we have followed a more systematic method, seeking, especially, richness in starch, excellence of flavor, power of resisting disease, with little tendency to develop blight. Unfortunately, he says, they are not always able to profit in France by our progress, because the French have a marked preference for Potatos with yellow flesh; whereas with us many years past there has been a preference for white-fleshed Potatos. Hence, even the celebrated Magnum Bonum, which my house had the honor of introducing in 1876, after a brief period of popularity in the Paris markets, is being almost abandoned as a table variety, on account of the flesh being too pale in colour. M. de VILMORIN remarks that in Germany considerable attention has been given to the raising of seed Potatos, more particularly with the object of obtaining varieties which are specially adapted for the production of alcohol and starch.

"ENGLISH AND IRISH POTATO CULTIVATION AND TRADE" was the subject of a lecture by Professor MALDEN. He said:

For the Potato to grow, there are several conditions which hold good: (1) A warm, dry, well drained soil, in a healthy state of fertility; (2) liberal manuring; (3) sound seed; (4) a change in the stock of seed; (5) varieties which possess disease resisting properties; (6) varieties which are suitable for the market; (7) deep and thorough cultivation; (8) good seed bed systems, in which attention is given to moulding. There is, undoubtedly, great waste in attempting to grow them on a large scale on land not suitable for them. If necessity drives, and Potatos must be grown, the unfavorable soil should be rendered, so far as possible, similar to the deep but friable soils on which they prosper. This, of course, must be effected by means of raising water, and deep cultivation can do little if drainage is required. There can be no doubt as to the advantage of deep cultivation. The roots of Potatos like to penetrate deep. During the past two years my own observations have led me to think that a very large portion of the resistance which is taken up by the plants is by a great extent, the feeders. We have had two opportunities of watching the effect of drought on our hot gravel soils, the under moisture for which is obtained from shallow springs, and these springs have completely failed. On both occasions fifty per cent. must be reckoned as having perished, and the expected crops as might have been expected; but when the dries have been heavy enough to go to the roots, there has been a rapid growth. I am speaking of instances where, through prolonged drought, growth had not only stopped, but the plants were withering. The greater the depth of cultivation, the more the water is absorbed, the roots are in a dry time, and the ester will excessive moisture be drained from the tubers; while, of course, the roots range more easily for food as well as moisture.

The Potato is a gross feeder, and requires a considerable amount of nitrogen to make full growth. If, however, nitrogen is largely excluded, the plants will show the effect in the very heavy haulm and small tuberculation on some of the bog land is produced. Good quality is obtainable only when there is sufficient lime, potash, and phosphoric acid available. Farm-yard manure is a good dressing

for most soils; while, on good fen lands, large quantities of superphosphate of lime—even as much as half a ton per statute acre—are employed very satisfactorily. The subject of manuring is, however, one which would occupy a whole paper, so it is useless to attempt it here.

The Potatos which it is advisable to grow are those which sell readily. During the past few months it has been repeatedly pointed out to English growers that they should adhere to their prejudices and not to adapt their export manufactures to suit the taste of those to whom they hope to sell. When a people have become accustomed to a particular type it takes a long time to wean them from it. The English grower is, therefore, very foolish not to grow what he wants. The Englishman tries to force his own ideas down their throats, and they will not have them. Is there not something of a similar nature with regard to the Irish Potato grower? The Irish people have acquired the taste for what is regarded in England as a coarse-flavored Potato. An Englishman wants his Potato to hold as his better. The Englishman is probably a bad judge; but at the same time he is going to buy what he fancies, and the consequence is he will only have what is mild. He also wants a white-fleshed Potato, while the more popular Irish Potatos are yellow-fleshed. The French grower, on the other hand, who in France the white Potato is more or less despised. It, therefore, is probable that the Irishman is right, and where he grows for his own consumption he is very foolish not to grow what he likes. If he is satisfied with growing merely for his own consumption, and something over for the pig and chickens, the matter will rest here; but when he wishes to sell, he must strongly try there was to be a great advance in Irish farming in the near future. Straws show which way the wind blows, and I saw many straws which made me come to the conclusion that more skill and energy were going to be put into Irish farming. The man who can produce a crop of more is produced it must be exported, and the great importing country lies alongside of it, and there is nowhere else where the produce can be better placed than in England. To do this the Irish farmer must cater for the special market, and those he grows for this purpose must not necessarily be as good as those he grows for the home market, but they must be what the customer he hopes to obtain. He must, in fact, learn what is popular in England, and buy himself out to produce it.

I found when in Ireland that an idea prevailed that the English do not like a mealy or floury Potato. This is a mistake. The highest prices are obtained unless the Potato cooks dry. Those deep-eyed Potatos so popular in Ireland are not appreciated in England, where far greater variety in the methods of cooking, in many instances necessitating the peeling of the Potatos, is practised. It may be right to cook them in their skins, but Englishmen are not particular about them. Such varieties as Myrtle Ashford, Sharp's Victor, Cole's Favourite, The Puritan, Marquis Favourite, Supreme, Triumph, and Windsor Castle are necessary if this trade is to be obtained. It will be necessary as a rule to grow these near to shipping places, as the high rates and inconveniences of the Irish railway systems are to an extent prohibitive. If a good business is established, means for collecting and transporting would doubtless be organised. It is with all classes of Potatos necessary to market them in good condition, but it is more particularly so with early ones. They must be well selected and properly packed. The greater portion of the export trade is naturally by late varieties. Whether the grower sticks to the Champion for his own consumption is a matter for the Irish to decide; it is, however, useless for export to meet the better and therefore more paying markets in England.

If Irish Potato culture is to be improved with the idea of increasing competition with the Champion, the same similar coarse varieties must be left out. The Beauty of Bute is a degree better than the Champion, but in accordance with English ideas it is second rate. I was somewhat disappointed with it in trial with about twenty other kinds, as it was the earliest to disease this year. Except for this it appeared to be a good variety, and well adapted for the market, at prices. The Kemp, which does well for the Irish early trade, is not well suited for export; far better Potatos are obtainable at the time these are ready to come in.

The past two hot, dry seasons have been distinctly favorable for the growth of the Champion, and have done much to increase its popularity. It is a variety which during the dry seasons which have prevailed of late is in itself a source of danger. It must become diseased to a serious extent when wet summers prevail again. Climates do not change materially. The sense of security which the past few years have produced should not lead the grower into a state of dormant complacency, there will be a time when it will be taken from it. The Champion is not a safe anchor to trust to. In its early vigour it practically rules Ireland; in its deteriorated state it is no longer safe, and disease must overtake it on the first occasion when a season favorable for the development of disease comes. Whilst it is so popular for culinary

purposes, and in dry seasons crops satisfactorily, I do not advise its absolute elimination, but I regard it as being a careless and wilful act on the part of growers to place practically their existence on the growth of one variety of Potato, when by almost common assent that variety has become unreliable and no longer reliable. There are three varieties which the grower should grow for himself, for exportation, a selection of varieties which possess the best power of resisting disease and such as command good prices, and by spraying. If he can be got to see the folly of trusting almost entirely to one variety—good as that variety proved itself in the past—feel sure he will conduct his Potato growing on a sound basis, and his crops will hold. Potatos are not popular in Ireland; though why they should not be so in dry seasons I do not quite understand. I am aware of the great tendency all but the newest introductions have to produce second growth, and therefore inferior quality, when from any cause they receive a check in their growth. We have largely given up growing late kidneys because of this tendency to second growth, as our farms are in a particularly dry climate, and the soil is largely a hot, burning gravel, so that in hot seasons they are liable to receive a check. But in ordinary years the tubers do not suffer, and I therefore do not recommend those late kidneys which have been sufficiently long before the public to have proved themselves, but not long enough to have become afflicted with the weakness incidental to old age. Although scarcely a kidney, there is no variety which has been so successful as the Up-to-Date, which in its short career has rapidly attained a position as a firm earner, and alongside of it I would put the Farmers' Glory, whose weakness is its strength; for if it has a marked failing, it is its robustness, which, after all, is generally a virtue in a new variety. Among the rounds I regard the White Kidney as being the best wet season variety, and it appears to revel in wet, and one which is not so much affected where a large quantity of wet fell when showers were few in most places, yielded seventeen tons per statute acre. Among many varieties, over thirty, which we grew this year it was the last to be affected by disease in the wet period of the latter part of August and all September. On the 25th of September, when other varieties were rotting, the White Kidney pieces still practically free from disease. I regard it as highly important to grow a selection of varieties embracing those which flourish best in dry seasons, and others which grow best in wet years, as then excessive losses may be avoided to a great extent.

In these days of spraying it is advisable not to grow varieties which produce such tall haulm that the sprayer cannot be worked into them. A change of seed is an extra advantage, though, when it is taken from a climate differing widely from that to which it is transported, it may give a disappointing result in the first season, and, in fact, may seem to be some of its more marked characteristics; but after acclimatization to the soil and climate, it is in normal condition. This is noticeable not only in the Potato, but in crops such as Barley, Wheat, &c. It is not a rare occurrence to hear those who have made a change of seed say, "I did not see that I did any better by it, and I don't much care about getting any more that way." A broad and long experience, however, has definitely proved a change of seed to be really advantageous.

On behalf of Mr. A. FINELAY, of Markine, who was unable to attend, Mr. ROBINSON read the following paper on "The Rise and Fall of the New York Spruce Croton."

In the beginning, like most of those who have essayed the task, I began my career by picking a plant here and a plant there of some variety that naturally bore them, and I had a fancy for sowing the seed so obtained and watching the plants from year to year in their development—very interesting, curious sometimes, and in a sense, highly educative. Highly educative, because I had seen the same variety in ordinary tendency of the plants to run into variety; every plant, in fact, no matter how many you had, all of the same variety, differing from its fellows in some particular. But the object I had in view was not the perplexing of the minds of the growers by assisting in the piling up of a perfect agony of common varieties, which would be a waste of time and seedsmen's lists, dressed out in all the glory of the most misleading names imaginable. The task I have set myself was the improvement of the plant and the placing into the hands of growers, from time to time, varieties that would be an improvement on the respective classes—in regard to the improvement of the plant, the respective classes—merely of quality, and by reason of greater hardiness—that is, greater power to resist the attacks of peronospora and other fungoid enemies as ably described to you by Professors JOHNSON and WILKINSON. My experience in the sort of work I have just described in the course of time led me to the conviction that it was not by this method that I was to accomplish the object I had in view. No doubt some fairly good things had been got by this method—things of chance, in which there was neither honour nor credit; and to be plain, it appeared to me a blot on our intelligence, that such a thing should be done in any manner to the human race should be so ill understood and rationally cared for that its continued successful cultivation could be at any time a matter in which there was a doubt. However, such chance seedlings as the Victoria, the Champion, and the Magnum Bonum (if my information in regard to the latter is correct) were all in my mind, and I was a power within the plant, if properly understood and developed, that would place the Potato in a practically reliable position as one of the greatest food producing plants known. In the consideration of this important matter it dawned upon

my mind that it might be worth while, so far as my ingenuity could carry me, to adopt some of the methods of the most famous breeders of live stock—that is, the selection and mating of different varieties, and to make note of the results, and thereby discover the best lines (if there was anything in the ideal on which to proceed to build up the Potato on which I had set my mind). The fascination of this work was on me, and a few years ago I met the happy possessor of the Bruce Potato, which went far to raise my hopes and send me along with all the determination and energy we Scotchmen get credit for, and are so proud of.

The Bruce Potato, as I have so often and elsewhere said, is a true cross between the Victoria and Late Rose, but I would have you bear in mind that these, the parents of the Bruce, had been brought by means of careful selection to a higher state of perfection than I had ever seen them. There is another matter in connection with Potato raising that I have always found of advantage—that is, the making of the narrowest possible selection of any Potato that shows promise of being worth attention. I, for my own part, often go so far as to reduce my stock of the most promising sort to the best tubers of the best plant in the third year of their existence, as by so doing I am convinced belongs a certain amount of the success that has been the good fortune of some of my introductions to attain. It may be of interest as showing that even after one has got a good thing that one's difficulties are not by any means at an end, to tell you some of my experience in getting the Bruce out into the world. In the spring of 1886 I had about two tons, and although I offered them to all the leading seed houses, without finding a buyer in one of them, and to all my former acquaintances, I only succeeded in selling a few cwt., although I offered them at the very modest price of 12s. 6d. per cwt. I, however, planted the remainder, and although stock had greatly increased, and all my customers of 1886 were delighted, I only succeeded in spring, 1887, to increase my sales to a very trifling extent. But they were now well spread about, as I had done a little advertising, and got them, as I have heard, beyond local prejudice. In spring, 1888, their fame had filled the land, and I was able not only to sell all I had of my own, but also all the spare stock of those who had bought from me in 1886 and 1887. The success of this Scotch-American Bruce, made me anxious to test the value of the leading American introductions always made in this same rigorous system of selection both before and after cross fertilisation, and I was able to offer in 1889, Lady Fife, Lady Frances, and Her Majesty Potatoes, all out of the Victoria and the White Elephant and a few others, but none of these Scotch-American crosses—good and popular as they were—quite satisfied me. I had a bigger idea than they had come up to. In 1890 I was able to offer Jennie Deans and Early Beauty, out of what I may call a double Scotch-American cross—first cross, Beauty of Hebron and Victoria; second cross seedling off and natural seedling out of the old Scottish Blue Do.

Now, at this stage of my work I had become impressed that the Victoria, notwithstanding my care and expedients, was getting into what may be called an old age and decrepitude, and for this reason of no further use in the raising of anything of a trustworthy character; and that though some fairly good things, such as those I have mentioned, had been got out of Scotch-American hybrids, I had become convinced that it was not through the use of these Americans that I was to get anything of commanding merit, as I resolved to form an entirely new breeding stock. Whether I have done wisely I will leave those who have grown my later introductions, such as Up-to-date, British Queen, and Challenger, to say. But if I am to believe the reports of those that I live for some time been conspicuously in evidence in the newspapers and journals devoted to horticulture and agriculture, and bearing altogether my own personal experience, I would have some reason to be pleased with my doings.

NURSERY NOTES.

THOS. KENNEDY & CO., DUMFRIES.

THE nurseries of this firm have been in existence for over a century, and are distributed about and around the town of Dumfries. Although dealing in all sorts of nursery stock, the staple articles are forest trees, a large number of which find their way all over the country from the orders of Her Majesty's Commissioners of Woods and Forests and the Irish Land Commissioners. The stock of Larch, for instance, is a very large one, not fewer than 20 acres being covered with this forest tree alone. It, too, is in splendid condition, the 1-yr. seedling beds being as fine as could be, and their 1-yr. seedling 1-yr. transplanted moving and furnishing as one likes to see them; while the parcel of 2-yr. seedling 1-yr. transplanted, shows that the seedlings revel in the quarters they live in. The cultivable lands of Dumfriesshire consist of fine rich loams of great fertility. Scores of men were busy at the time of our visit, raising for seedling off by railway hundreds of thousands of 2-yr. seedling 1-yr. transplanted, and the plants were as clean and uniform as any that we ever saw—without

the slightest trace of disease or decay, and the wonder is, looking at such sturdy vigour in the 3-yr. old plants, why they should ever give way in our general plantations. The seed, we understand, is all "home grown," collected from trees in the north of Scotland.

Scots Pine is the next most important item in the forest planter's calendar; indeed, Larch and Scots both go together—the planter that buys the one generally buys the other. This Highland Pine, in a young state, is very captivating, the eye resting on the uniform breadth of its with delight. Where it is carefully provided for in the shape of good land, fed occasionally with manure, it will repay the outlay. The square heaps of manure in the quarters, ready to be handled with either spade or prong, indicate that the land that has borne a crop will be dressed with that which will restore its fertility before the fresh crop is taken. It was impossible to see finer 2-year seedling 1-year transplanted Scots Fir than the crop here; and then the larger 1 to 2 feet were in fine condition. The firm here, too, do not overcrowd their plants when transplanted, neither in the rows nor between the rows, and hence the plants individualise well, and when you examine the plants so managed, and those of similar age crowded together, the one is seen to be much fuller of fibres than the other.

The Corsican Pine (*Pinus Laricio*) was noted in great breaths, and is doing as well as its neighbour, *Pinus sylvestris*. Its twisted needles indicate its distinctness; moreover, it is the more rapid grower. Some allege that it ought to be made a plantation by itself, as it does not mix well, overtopping its congeners. Here in the fine tilth it is quite delightful to look at from the 1-yr. 1-yr. bedded to the breadth of about 15 to 18 inches high. It is one of the best of our seaside Conifers, and from its usefulness as a timber-tree, where it does well, it is invaluable.

The Douglas Fir (*Pseudotsuga Douglasii*) must always command attention. Unlike the Scots Fir, it has a starved-looking appearance in youth, improving with age for general ornamental appearance, and its rank as a timber tree must depend upon the locality where it is grown. As an ornamental Conifer in uplands, where it is partly sheltered, it has no equal. It appears that the Colorado seedlings are the hardest and best, beating our native seeds in that direction, as the latter seedlings have a tendency to grow on longer, and catch the early autumn frosts; this is a point of considerable importance. I saw samples of them both here and also at Little & Ballantyne's, Carlisle, and noted that the Colorado seedlings were better matured as regards this season's growth.

The Spruce Firs are here in pretty plantations, and soon to stand the shade of deciduous trees of same size better than any similar Conifer. It is beautiful to look at, and comes in as one of the principal plantation trees. The Silver Fir does not appear to do so well in this locality, there is a disposition to get sickly-looking, although it is much in demand; and where it does well, as about the Duke of Argyll's estate at Rosneath, where the two largest trees exist in this country, years ago described by the writer in the *Gardeners' Chronicle*, nothing could be more stately, and the beautiful silver sheen of the branches makes it a most desirable plantation tree.

The Crimean Silver Fir (*Abies Nordmanniana*) is a good breadth, and one of our most symmetrical Conifers up to the time it steers clear of the "lousie," then its needles get discoloured and fall off, rendering it very unsightly. In a young state it is most desirable, although it will never take the position claimed for it a quarter of a century ago by some foresters as the future Silver Fir of commerce.

Pinus austriaca is always in demand, and does fully as well as any of its tribe in or about town, country, or seaside. It will always take rank as a fine screen tree, rapidly getting up, however, getting uglier and less useful the older it grows. There are quantities of it in this nursery.

Amongst the lesser fry of Conifers that are largely grown here, and seem to find a ready sale, are *Cupressus Lawsonii* in variety, the golden form is particularly

striking. Nothing seems to be more cultivated than *Retinospora plumosa aurea*, which seems to do well everywhere, and then *Retinospora squarrosa* is about the best smoke-standing plant we have in the whole race.

Among deciduous trees, we noted the Horse-Chestnut, which does splendidly, from small trees up to those 12 feet high; but, singularly enough, neither the scarlet nor the yellow will do, getting diseased in the bark, stunted, and unfit for commerce. A large business seems to be done in the common Alder, a good tree for wet land, and grown in quantities here from 2-year seedling up to 4 feet. The common Ash is growing in importance for estate work, and when in large size it is invaluable for avenues about towns, withstanding smokes, and chemical vapours generally, better than any other tree. It grows well, too, on a clay subsoil, and the firm say that they never can get overstocked with it. Horbeam we were glad to see quantities of, as it is so useful as a hard-wood tree, not beaten in this respect for endurance, and is highly ornamental when planted for park decoration. Beech is a plant that seems to be bought everywhere, both for hedgerow and for forest-purposes.

Thorns or Quicks like good treatment, and seem to pay the better they are seen to. This hedgerow plant is always in demand, and no nursery for the last few years has had an overstock of it; consequently its value is well sustained even in these hard agricultural times. Birch is in great quantity, and in numerous variety, the weeping form of it is very noticeable, and the lots of 3 to 4 feet of the silver form covering a considerable area. The English Oak revels in these quarters, and there are many rows of Turkey Oak and a good sprinkling of the American varieties. The Myrobalan Plum, used as hedging, is grown in quantity, and the Service-tree and the Rowan, so useful in mixed plantations, pass before the eye. Limes are in quantity, from 2 to 3 up to 10 feet high and more, and are so much in demand for small places that the stock is readily taken up outside of the trade.

One of the most striking subjects for autumn and winter decoration is the Golden-leaved Willow. It is a grand distance object, and in the lines which we saw of it illumine the grounds with a brilliancy without a rival. It is a straight stiff grower, and is in every way suited for the margins of lakes near running water, and among underwood.

There is a large stock of fruit trees, particularly Apple, worked both on the free and Paradise stock, presenting a good appearance, quite free from American blight. The stock of Gooseberries is considerable, and the other smaller fruits are well represented.

There are many other plants—*Rhododendrons* and *Roses*, for instance—which we must pass over altogether. The place is in first-rate order, the whole of the subjects being properly handled, and kept clear of noxious weeds. There is no waste of space in the shape of unnecessary roads and walks, and the grounds generally, covering over 70 acres, are free and open, few, if any, protective hedges being planted, and the neck of forest trees fully exposed to the four winds.

J. A.

VARIAION IN FERNS.

THE following extracts are taken from a paper read before the British Pteridological Society by Dr. Stansfield, on "Weismann's Theory of Heredity and its relations to British Ferns." We have eliminated much of the purely speculative part of the paper, and confined the matter as closely as possible to ascertained facts and inferences from them.

"Herbert Spencer defines heredity as the capacity of every plant and animal to produce other individuals of a like kind. We are so accustomed to this phenomenon of heredity that the superficial, who always form the vast majority of mankind, look upon it as a matter of course, and as a thing not requiring to be explained. The more thoughtful, on the other hand, have for long looked upon it as an inscrutable mystery—a thing not to be explained by human

intelligence. Of late years, however, various attempts have been made to penetrate somewhat into the mystery, and of these, one of the most important is that of the German Professor, Weismann.

HEREDITY.

To put the problem in a concrete and familiar form, we want to know how it is that Ferns always produce Ferns; mice always reproduce mice, and men and women have human children. How it is that seedlings from a *Scolopendrium* are always *Scolopendriums*; that in a pure bred herd of Alderney cattle we never get a Kerry calf; that from a pure flock of, say, Black Spanish poultry, we never get a Cochinchina chicken. Again, we want to know why Alderney calves are not all alike, but on the contrary, are all different; why there are so many different seedlings in a sowing of *A. f. setigerum*, and so few variations in a sowing of *L. ps.-m. crispa gracilis*; why the same pair of human parents will have one child with red hair and another with black. Further, we want to know why children (animal and vegetable) occasionally bear a much closer resemblance to one or other of their grand-parents, or even to some more remote ancestor, than they do to their immediate parents.

All these questions and many others Weismann tackles and answers more or less successfully. Those who care to go into the matter more fully, will find what they want in Weismann's book *The Germ-plasm*, which has been translated into English, and published in the contemporary science series by Walter Scott.

Of course the best-known method of reproduction of organisms is sexual reproduction—that is, by the union of two germs; but there are asexual modes of reproduction, buds, bulbils, and cuttings. Of similar asexual forms in the animal kingdom, I may mention the parthenogenetic production of drone eggs by the queen bee, and the viviparous reproduction of aphides, or green-fly, by the imperfect insect, both of which are quite independent of any process of fertilisation.

To begin, however, with the more familiar process of sexual generation, we know that the whole of the characters of the plant or animal must in some way be capable of being packed up within the extremely minute compass of a sperm-cell and a germ-cell, and since a spore is capable of producing both sperm-cells and germ-cells, the whole of the complex characters of a Fern, say *Athyrium f. clarissima* or *Lastrea montana* Barnesii, must somehow be contained within the narrow compass of a spore.

The ultimate male and female elements are of course the ovum, or egg-cell, and the antherozoid, or sperm-cell. Of these, the egg-cell is very much the larger, but we do not therefore find that the offspring as a rule resemble the female parent much more than the male. On the other hand, the characters of the two parents are generally fairly equally balanced, and when they are unequal, those of the male are just about as likely to preponderate as those of the female.

The inference must be either that the hereditary substance is weaker in the large egg-cell than in the very small sperm-cell, or that only a small part of the egg-cell consists of hereditary substance, the rest being merely nutritive material. There is abundant evidence that the latter is the case. When the sperm-cell or antherozoid penetrates the egg-cell, it takes no notice of the great body of the latter, but plunges through it and makes straight for the nucleus with which it blends itself. We shall see by-and-by that there is reason to suppose—not that the hereditary substance is the nucleus or the cell, but that the nucleus contains the hereditary substance.

THE DIVISION OF THE NUCLEUS.

The growth of plants and animals consists in the division and sub-division of cells. Within a comparatively few years, it has been observed that whenever a cell divides into two, a very complicated process is gone through.

Somewhere in the interior of the cell, and generally about the middle, can be seen by the microscope a small round spot, generally of a slightly darker colour

than the rest of the cell—this is the nucleus. When the nucleus is stained and examined with the highest magnifying powers, it is found to be an extremely complex body; it is separated off from the rest of the cell by an extremely delicate membrane or wall, which, however, under certain circumstances, sometimes disappears. It is permeated by an extremely fine and complicated network of threads. When a cell is about to divide, some curious changes take place in the nucleus, and particularly in the network of threads which I have mentioned. The threads cease to be a network, and assume the form of a single coiled fibre; next, this breaks up into a number of detached pieces, which then arrange themselves in the form of a series of loops around the equator of the cell. Each of these loops then split along its whole length, as if a piece of untwisted rope had its strands separated into two thinner ropes, and the split portions are drawn gradually towards the two ends of the cell, where they join themselves together into two bundles, are followed by the rest of the nuclear substance, and form two separate nuclei. While this process has been going on, the protoplasm of the cell has been tending to collect itself around the two daughter nuclei, and by the time the nucleus has fully divided, the rest of the protoplasm is ready to follow its example, and to divide into two parts. This complicated process takes place whenever a cell divides; that is to say, it is taking place in millions of cells in almost every growing plant. To the name of "mitosis" has been given by biologists, and it is highly suggestive of the extreme importance of the nuclear threads of which I have spoken, and to which the name of "chromosomes" has been given, because they have the property, in a pronounced degree, of absorbing colouring-matter, which may be brought in contact with the cell to which they belong. Now an egg-cell is developed from the ovary in the same way that other cells are developed. When, however, an egg-cell is fully developed or ripe, its nucleus divides into two parts; but, instead of the whole cell dividing, one of the halves of the nucleus is simply thrust outside the cell, and there perishes. The part thrown out is called a "polar body." The nuclear loops, however, in this case are not split, but simply one half of their number are removed in their entirety. From that moment no further development takes place in the egg-cell until fertilisation has occurred, and that process consists in the replacement of the lost half of the nucleus by another half nucleus, containing a similar series of rods or loops, from a sperm-cell. All this, of course, is a matter of observation and fact, and not of theory.

VARIATIONS IN FERNS.

If we come to examine Fern varieties in detail, we shall find that nearly all of them are cases either of excess or of deficiency of development in some part or parts of the plant. According to Weismann, these correspond to local inequalities in the nutrition of the germ-plasm in the parent Fern. One thing you will all have noticed, viz.; that you may sow spores of a perfectly normal Fern generation after generation without getting any appreciable variation in the seedlings. But if you once get a break—once get a variation, however small, from the normal type—and sow from that, you immediately get a number of fresh variations. Take Mr. Barnes' crested *dilatata* and *montana*, for example. Mr. Barnes first of all found a natural break differing comparatively little from the type—that we should call an ordinary variety. Sowing this, the result was a number of varieties much superior to (i.e., more abnormal than) the parent; doubtless along with them were a large number inferior to the parent, and probably some quite normal ones. Mr. Barnes, however, like the wise man he was, threw the bad ones away and kept only the good ones. In this way almost any slight natural variation, by repeated sowings and selections, may be developed to almost any extent compatible with life. This is explained by the first variation affecting a few only of the "ids" [elementary particles] of the germ-plasm. Let us suppose for the sake of convenience that there were twenty ids in the germ-plasm,

and that, say three of them, were so modified as to produce cresting. Then, at the next generation we get a reducing division. It might happen that the crested ids, as I may call them, might be thrown out in the polar bodies, in which case we should get a return to the normal form. On the other hand, it might happen that ten normal ids of the egg-cell might be thrown out, leaving seven normal and three crested. If this egg-cell should happen to be fertilised by a sperm-cell which had similarly thrown out all normal ids, we should get a new germ-plasm, containing fourteen normal ids and six crested ones, in which the crested character would be intensified in the next generation. I may give you an ocular illustration of this by supposing the "ids" to be represented by coloured discs.

REVERSION.

Let us now glance for a moment at the phenomenon of reversion or atavism. An organism will sometimes exhibit characters and peculiarities which cannot be detected in either of its parents, but which belonged to one or other of its grand-parents, or even to some ancestor many generations back. The explanation of this in Weismann's theory is very simple. I have already explained that the germ-plasm of an individual contains "ids," derived from a long line of ancestors. Every variety of recent origin probably contains some normal "ids" of the species to which it belongs. Mr. Drury can tell us that in raising young plants of *A. f. clarissima*, some of the offspring tend to run back to the normal form of *A. filix-femina*. The reason for this is that by a reducing division the germ-cells have got rid of some of the *clarissima* ids, and so the normal ids have obtained a majority and gained the upper hand. There are probably, however, some *clarissima* ids still contained in the germ-plasm of these degenerate forms, but these form only a small minority, and are consequently unable to produce much impression upon the character of the plant. If, however, we sow again from these renegades we get a fresh series of reducing divisions, and in some of these it may happen that the *clarissima* ids gain the upper hand, and so we again get a few *clarissima* seedlings from the degenerated parents, although the bulk of the offspring are probably normal *Athyrium filix-femina*.

Let us take as another example *Polypodium n. corubiense*, which produces normal fronds among the dissected ones. In this Fern the abnormal ids have presumably only a very small working majority, and so the government is apt, as it were, to be caught napping, and to be occasionally overtaken. Sometimes this defeat is so humiliating that the government resigns and the opposition takes office, that is to say, the Fern reverts entirely to the normal form. It is probable, however, that if we sowed spores from these reverted plants we should get fresh reducing divisions and re-combinations, in some of which the advanced party would again gain the majority and again take on the reins of government. I am not aware that this has been done in this particular case, because Fern-growers as a rule prefer to sow from their best plants and not from their worst. From the biological point of view, and for scientific reasons, however, it would be well worth while to occasionally sow from reverted forms and record the results.

There is a prevailing impression among Fern-growers that if we sow spores from characteristic parts of a plant, we are more likely to get improved forms than if we sow from parts which bear the particular character in a less degree, or not at all. It is a common practice, for instance, to take the spores from crested tips of fronds and pinne, in the hope of getting improved crested forms in the offspring. I may say at once that this idea and practice does not fit in at all with Weismann's theory. According to Weismann the germ-plasm is the same in all parts of the plant, and we are therefore just as likely to get true seedlings of *A. f. f. Kalthrix* by sowing from the worst fronds as by sowing from the best. This point can only be determined by a large number of impartial experiments, instituted for the express purpose of finding out the truth, and not for the purpose of either raising a stock of good Ferns, or of confirming our pre-conceived notions. For my own

part I have never satisfied myself that there was anything to be gained by sowing from particular parts of a frond, and I am certain that it is quite possible to obtain characteristic seedlings of a variety by sowing from parts of the frond which do not bear the particular character in question."

FLORISTS' FLOWERS.

WHEN TO PROPAGATE THE CHRYSANTHEMUM.

To those of your readers conversant with the columns of the *Gardeners' Chronicle* twenty years ago, this will be reviving an old subject, but even to them, and to our younger brethren of the spade, I hope it may be interesting; for as good wine requires no bush, neither does such a suitable subject require any commendation. To recall the past twenty years, and compare the varieties then in cultivation with those of the present day, we find none of the Japanese of 1876 now existing; while, on the other hand, those of the incurred section are, to a very great extent, still popular. But the improvements made in the Japanese section are simply marvellous, indeed, so much so that Mr. Norman Davis (who is a great authority on the Chrysanthemum), remarked to me a little while ago, "I think we have gone almost as far as we can get in improving them, and they will soon be on the wane." Well, this is quite reasonable. Have not many other species of plants had their day, and then made room for something more popular? It has occurred to me that we may do a good deal to preserve the popularity of this, the queen of autumn flowers, and as it is not the first time I have made suggestions which have afterwards been taken up with good results, I hope that my present proposals may be taken up with equal zeal, and meet with as good results. It will be remembered that when this subject appeared in the pages of the *Gardeners' Chronicle* twenty years ago, it arose from a few reasonable remarks from the able pen of that excellent cultivator, the late Thomas Bines, December 8, 1877, on p. 719, where he advocates early propagation, and gives very pithy reasons for doing so. The subject was afterwards taken up by the late Mr. Hinds, who condemned early propagation, and gave reasons why it should be deferred to the end of January or early February (see *Gard. Chron.*, December 22, 1877, p. 779). This latter letter was criticised by the pen of the present writer (January 26, 1878, p. 107), and in doing so I made the following proposal:—"Perhaps it would be desirable to raise a subscription for the purchasing of a huge Challenge-cup or trophy, to be competed for annually at a meeting in connection with the Royal Horticultural Society, the victor having the custody of the cup from one annual meeting to the other, in the same way as some of the Challenge-cups and trophies are contested for at the National Rifle Association's meetings, and in addition to the cup a money prize may be awarded, the amount of which may be determined by the society. It would be a good plan to offer such a prize for twelve blooms in each section. This arrangement would admit growers of all classes, and would undoubtedly stimulate Chrysanthemum growers to the utmost extent, and prove a very considerable advantage to the society, as it would create considerable interest, and raise the Chrysanthemum a step beyond its infant days." At the time I wrote this there was no Challenge-cup in existence for Chrysanthemums, neither did the Royal Horticultural Society take the subject up. The Kingston Society, which was the first to adopt a Challenge-cup, had just held their first show on Nov. 21 and 22 (see *Gardeners' Chronicle*, p. 663, November 24, 1877); and on November 27, 1879, their first Challenge-cup was competed for, and from then until now that society can truly boast of a grand run of success, and the society has been supported by growers who stand unrivalled in the Chrysanthemum world. It is also interesting to note that at that time the amalgamation of those societies which were the parents of, and are now known as, that influential body, "The National

Chrysanthemum Society," had not taken place, as it was not until March 1, 1883, that Mr. Cannell proposed the adopted name of this Society, and which came into operation January, 1884. That the adoption of Challenge-cups at Kingston had a remarkable effect in stimulating Chrysanthemum cultivation is certainly beyond dispute, for proof of which I may instance the numerous societies which have sprung into existence, and which have in most cases established their challenge competitions with cups, &c. We also have some of the best cultivators in the Kingston competitions, and in looking up the reports of the shows held there, I find the following winners, viz.:—1879, Mr. Harding, Putney; 1880, Mr. Tunnington, Liverpool; 1881, Mr. Faulkner, Liverpool; in 1882, the competition was limited to these three winners, but unfortunately Mr. Faulkner died a few days before the competition came off, but his blooms were staged, and Mr. Harding won the first cup for the last time, at the same time that the second cup was being competed for and won by Mr. E. Molyneux, Swamore Park, Bishop's Waltham; in 1883, Mr. Molyneux winning again, and taking the second cup. In 1884, Mr. Molyneux was again to the fore; and in 1885 he repeated his victory, and finally won the third cup. In 1886, Mr. Gibson, of Morden, came to the front and won; and in 1887 he repeated his victory, and finally won the fourth cup. In 1888, Mr. Coombs, of Teddington, won; and in 1889 he repeated his victory, and finally won the fifth cup. In 1890, Mr. Beckett, of Surbiton, won; in 1891, Mr. Carpenter, Weybridge, won; in 1892, Mr. Mease, of Leatherhead, won; and in 1893 the competition was restricted to these three winners, and the cup was finally won by Mr. Mease; and the first competition for the sixth cup was taking place, it being won by Mr. Neville, of Fyford, Hants. In the year 1894 Mr. Higgs, of Leatherhead, came to the front a winner, repeating his victory the following year, winning the sixth cup. In the year now passed away, Mr. Hunt, of Leatherhead, won for the first time. This is a magnificent record of what can be done by a society determined to hold its own in the Chrysanthemum world, constituting a good example for others to copy. Only let a society offer good prizes, and a keen competition is sure to result, and where there is good competition, the public will assemble in large numbers, giving support to the society. As numerous Chrysanthemum societies have discovered who have competitions for Challenge-cups, some of greater value than others, which when won twice or thrice are finally won, it has occurred to me that if a few influential men were to join together and raise the sum of 200 or 300 guineas by subscriptions obtained from growers in general, we might then have a magnificent competition trophy. The competition might receive its start at a London show, and then go to, say, Edinburgh one year, Dublin another, Liverpool, Exeter, Birmingham, Glasgow, Belfast, and other centres in turn, and in perpetuity, adding a sum of money with the trophy each year. Such a prize ought to stimulate both employers and employed to take greater interest in our queen of autumn flowers, and so ward off the "wane" to the furthest date; and we should soon see cultivators from the provinces get into the front ranks—men who have never been heard of, and which is exactly what is wanted. We know the effect produced at Kingston by a 25-guinea cup; what, therefore, would a 300 guinea cup do? And who can say that such a trophy would not have the effect of creating county societies with trophies of their own to be competed for in their respective areas. Will the National Chrysanthemum Society or the Royal Horticultural Society take up the matter of organisation? as I feel sure such a move would meet with a hearty response from many quarters, and I should think affiliated societies would also help in the matter. The present is most opportune for getting the affair established, and so commemorate in the Chrysanthemum world Her Majesty's long reign. For some years past I have been drifting out of the ordinary course of gardening, and fettered with a multiplicity of estate duties, situated in two widely separated counties. I have consequently found it impossible to pay special

attention to any one subject in gardening, but having lately got rid of the heaviest portion of my responsibilities, I am enabled to devote a little more time to Chrysanthemums. In furtherance of this idea I shall try this year a number of novelties, and I have got amongst others Mrs. Weeks, which Mr. Norman Davis told me was about the best Chrysanthemum ever raised. I purchased five plants at the beginning of April last, and as fast as shoots fit for cuttings appeared, I had them put in, and I now possess 200 plants. I will confess that I was much disappointed with the blooms of Mrs. Weeks which were staged at the show in the Royal Aquarium, and other shows. There is not the least doubt in my mind that cultivators working on the orthodox methods of putting in cuttings at given dates in a general way, have not hit on the proper time, so as to produce Mrs. Weeks at its best. Mr. Davis told me I was too late for the finest blooms, and other growers had stolen a march on me, but I determined to make a feature of them, and found the plants I purchased failed to produce the finest blooms; but cuttings taken off in the second week of April produced the finest bloom; of any incurred Japanese Chrysanthemum that I ever saw. The plants were grown in the ordinary way with single stems and one bloom, the "buds taken" the second week in August (rather late); and on plants growing in 7-inch pots, the blooms measured over 2 feet in circumference in every direction. Mr. Lyne, when at Wimbledon House on November 11, remarked, "They are the finest blooms I ever saw, and worth a long journey to see. I shall go back to Kent and sing the praises of Mrs. Weeks." Other noted growers, including Mr. Gibson, the Messrs. Alderman, Mr. Bates, and others made similar remarks. I would strongly advise those who wish to have Mrs. Weeks in her best form to put the cuttings in about the third week in March, and grow them on freely with single stems. Of the 200 plants of Mrs. Weeks which I grew, some of which were necessarily rooted late in the spring, and grown in small pots, I was more than satisfied, and had them in bloom till Christmas. Of the other forty varieties of novelties of 1896, that I cultivated in 1896, I shall be very pleased to record my experience if at all interesting to your readers. *J. Otterhead, Wimbledon, S.W.*

WORTH PARK, SUSSEX. THE RESIDENCE OF MRS. MONTEFIORE.

This is distinctly a fine place, splendidly kept and at once a credit to the owner and her gardener, Mr. Glen. It is pleasant to visit places where wealth is, because, if with it there be joined a high appreciation for gardening, then is it seen in its finest and most attractive aspect. It is just this sense of plenty, and almost of sumptuousness, which gratifies the visitor to Worth Park, because everything is so well done. The lodge-entrance is but a quarter of a mile, or hardly so far, from the well-known Three Bridges railway station. There is at the first evidence in the broad, hard, well-kept carriage-road that something good lies beyond, and although the first aspect is that of newness, yet very soon the scene is changed to older surroundings, and the road runs up a gentle incline for perhaps half a mile, through fine but informal borders of trees that are in this respect far more pleasing than the forest of straight avenues; whilst large bush Rhododendrons add to the grass margin beneath. There is at the highest part a couple of rows of young Limes that rather jar upon the hitherto-pleased senses; and all the more so, because thus early, for it is but September 24, whilst nearly all other deciduous trees are so green-leaved, these have their foliage brown and sere. What a pity it is that straight lines of trees should ever be thus planted, and specially that they should be of such unsatisfactory trees as Limes! However, here on the right hand, first passing through a small pinetum where are many noble specimens, are found the glasshouses and the kitchen gardens.

Throughout the whole of the houses there is that excellence and smartness in everything which characterises all the place. Fruit is getting over, for in

houses and on walls Peaches, Nectarines, and Plums have been pretty well cleared. Grapes, too, have been severely cut, but there are yet myriads of bunches of the usual good late varieties to keep up a long supply. Plant-houses are full of something of everything, especially such as will contribute to the decoration of the mansion internally. Thus, Ferns, Crotons, Palms, Acalyphas, Begonias, Poinsettias, Bouvardias, Carnations, Pelargoniums—something of everything, indeed—is largely grown, and well too, for demands in this direction are great. Such useful stuff as *Sanilax*, *Lygodium scandens*, *Asparagus plumosus*, &c., are grown in great quantities, on strings, for giving twining sprays. That splendid winter-flowering plant, with its noble dark leafage, *Pegonia Gloire de Sceaux*, is largely and well grown. Staudard Heliotropes of Swanley Giant are made into fine plants 3 feet 6 inches high, and good clean stems; these are pushed on in pairs, and in such form used for a week at a time in the great conservatory, to give perfume. Winter-blooming Carnations are in great numbers—fine sturdy stuff, just being housed; as also are *Chrysanthemums* of all descriptions. Very beautiful for giving colour to vases and small plant-groups is a large batch of crimson *Celosias*, purposely sown late.

In the direction of supplying plants and cut flowers for domestic decoration, the modern gardener, especially at such places as Worth Park, has a heavy responsibility, such as his predecessors of the middle of the century never dreamt of. Violets are outside in great quantities, to be lifted and got under glass. These, like Carnations and Roses, belong to the flowers that will always be in great request, as love for them will never die. *Physalis Alkekengi* is grown in great quantities, indeed scores of fine fruiting-stems have already been cut to dry, and scores of more may be so shortly. These are most useful to furnish decorative colour during the winter. The kitchen-gardens are well walled in, and the walls are well furnished with trees. The quarters are all fully cropped, and apparently secure, the same careful attention that is shown within the houses. Out in the pleasure grounds, much of which seems to have been fashioned but a few years, choice trees and shrubs, especially those of the early flowering form, have been largely planted. With huge groups of these are associated hardy perennials, bulbs, and such other plants in profusion as now usually decorate flower-gardens.

Separating this new garden from the mansion is a huge semi-circular corridor, very broad, with a wall at the back, planted throughout with *Camellias*, of which there are scores, flat-trained and doing very well. The roof, however, is opaque. A pity it was not of glass, as it would then suit plants better. The inner side alone is of glass, but it forms all the same a delightful cold winter promenade. On the narrow border outside, and in front of this corridor, *Violas* planted in the spring were then blooming profusely. The old Blue Bell full of bloom, also the rich yellow Bullion, and the white Countess of Hopetoun, were also flowering freely, as also largely in the flower-beds. *Veronica Hendersoni variegata* here makes a capital edging to broad beds, and should be noted by flower-gardeners. *Abutilon Thompsoni*, plunged in 6-inch pots, amidst rich crimson *Begonias*, in heat and light, and of rich variation. The mansion, as shown in the illustration (fig. 1), is of a bold—indeed, noble character. It seems to embody the finest features of the Italian school, and whilst lofty and massive, is yet very light and graceful. It stands prominent on the higher ground of the park, with a broad level of five trees at the back; whilst in front runs a broad terrace-walk, from which flights of steps lead to the noble fountain-basin and parterre-gardens below. Beyond is a broad expanse of park, and in the distance a fine lake, with extensive woodland beyond. The conservatory is placed right in the centre of the building, and whilst admirably suited for plant decoration, it can also be readily converted into a hall or reception room. The roof consists of a huge dome. On the north side of the mansion, and in the near pleasure-grounds, are numerous fine Conifers,

Cricket and lawn-tennis grounds have been amply furnished by the gardener, who has every department in the most perfect condition. Worth Park is famous for its splendid breed of Jersey cows, and the dairy erected a few years since out in the park is worthy of the breed. It consists of two floors, one for summer below, and one for winter above. The fittings and appointments are of the most perfect obtainable, and the entire building is superbly furnished; even the most modern form of cream-separator is driven by electricity. Such dairies are not for the trade; but when associated with wealth, as in this case, they are delightful to look upon and to enjoy. A. D.

Obituary.

JAMES WEBBER.—On the 4th inst., at Torrington Square, James Webber, of Covent Garden, in his fifty-sixth year. By the death of this gentleman Covent Garden Market loses one of its most eminent representatives, and horticulture one of its most active supporters. In almost every public movement for the furtherance of horticulture or the promotion of the welfare of its practitioners, Mr. Webber was to the fore, taking his share in the work, as well as giving liberally to the charities connected with horticulture, and with the market and parish, with which he was so long connected. He was, we may add, one of the originators of and permanent Hon. Secretary of the Covent Garden Life Boat fund. His loss will especially be severely felt at the Gardeners' Royal Benevolent and the Gardeners' Orphan Funds. Mr. Webber also did good service in directing the attention of our fruit-producers to the great necessity for the careful selection and proper packing of their consignments. For many years Mr. Webber supplied us with the greater part of our market reports, and was always ready to render us valuable information and assistance in questions connected with the market. Mr. Webber's establishment in the Centre Avenue is one of the oldest in the market, having been carried on originally by his father, and at his death by his mother, in conjunction with Mr. Taylor.

THE WEATHER.

[The term "accumulated temperature" indicates the aggregate amount, as well as the duration, of degrees of temperature above or below 42° Fabr. for the period named; and this combined result is expressed in Day-degrees—a "Day-degree" signifying 1 continued for twenty-four hours, or any other number of degrees for an inversely proportional number of hours.]

Days from the Month for the week ending January 2.	TEMPERATURE.				RAINFALL.	BRIGHT SUN.				
	ACCUMULATED.									
	Day-deg.	Day-deg.	Day-deg.	Day-deg.						
0	3	11	24	+16	-25	2	56.1	7	22	
1	4	9	28	+7	-176	1	213	29	18	
2	3	11	28	+12	-163.0	aver.	196	27.3	30	28
3	4	11	23	+68	-135	1	190	25.5	41	34
4	4	14	32	+4	-111	1	181	25.1	28	31
5	1	21	9	+102	-199	2	173	29.7	27	33
6	4	21	11	+169	-141	9	316	45.7	22	30
7	3	28	11	+226	-174	8	291	35.5	17	30
8	3	28	11	+226	-174	8	291	35.5	17	30
9	3	28	11	+226	-174	8	291	35.5	17	30
10	3	28	11	+226	-174	8	291	35.5	17	30
11	3	28	11	+226	-174	8	291	35.5	17	30
12	3	28	11	+226	-174	8	291	35.5	17	30
13	3	28	11	+226	-174	8	291	35.5	17	30
14	3	28	11	+226	-174	8	291	35.5	17	30
15	3	28	11	+226	-174	8	291	35.5	17	30
16	3	28	11	+226	-174	8	291	35.5	17	30
17	3	28	11	+226	-174	8	291	35.5	17	30
18	3	28	11	+226	-174	8	291	35.5	17	30
19	3	28	11	+226	-174	8	291	35.5	17	30
20	3	28	11	+226	-174	8	291	35.5	17	30
21	3	28	11	+226	-174	8	291	35.5	17	30
22	3	28	11	+226	-174	8	291	35.5	17	30
23	3	28	11	+226	-174	8	291	35.5	17	30
24	3	28	11	+226	-174	8	291	35.5	17	30
25	3	28	11	+226	-174	8	291	35.5	17	30
26	3	28	11	+226	-174	8	291	35.5	17	30
27	3	28	11	+226	-174	8	291	35.5	17	30
28	3	28	11	+226	-174	8	291	35.5	17	30
29	3	28	11	+226	-174	8	291	35.5	17	30
30	3	28	11	+226	-174	8	291	35.5	17	30
31	3	28	11	+226	-174	8	291	35.5	17	30

The districts in headed by number in the first column are the following:—
 0, Scotland, N. Principal Wheat-producers Districts—
 1, Scotland, E.; 2, England, N.E.; 3, England, E.;
 4, Midland Counties; 5, England, including London. 6,
 Principal Grazing, &c. Districts—6, Scotland, W.;
 7, England, N.W.; 8, England, S.W.; 9, Ireland, N.;
 10, Ireland, S.; *Channel Islands.

THE PAST WEEK.

The following summary record of the weather throughout the British Islands for the week ending January 2, is furnished from the Meteorological Office:—

"The weather continued mild and changeable very generally, considerable falls of rain having alternated with periods of clear sky."

"The temperature was above the mean, the excess varying between 3° and 14°, the highest of the maxima were recorded during the mid-day of the week, and ranged from 57° in Ireland, N., to 54° in Scotland, N. The lowest of the minima, which were recorded on January 2, ranged from 21° in the Midland Counties; and 23° in England, S.W., N.W., and E., to 31° in Scotland, N., and to 37° in the Channel Islands. During the greater part of the week the minima, even at the northern and inland stations, were much above the freezing-point."

"The rainfall was more than the mean over the Kingdom as a whole, but was just equal to the normal in England, S.W. and N.E., and rather less than it in Scotland, E., England, S., and the Channel Islands."

"The bright sunshine exceeded the mean in most localities, but was somewhat deficient in some of the west and north districts, as well as in Scotland, N. and the Channel Islands. The percentage of the possible duration ranged from 41 in England, E.; and from 21 in England, N.E., to 19 in Scotland, E.; and the Channel Islands; to 17 in England, N.W. and 7 in Scotland, N."

MARKETS.

COVENT GARDEN, JANUARY 7.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Thursday, by the kindness of several of the principal salesmen, who revise the list, and who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general averages for the week preceding the date of our report. The prices depend upon the quantity of the samples, the supply to the market, and the demand; and they may fluctuate, not only from day to day, but often several times in one day. Ed.]

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES. s. d. s. d.

Adiantum, per doz.	12 0-30	Ericas, bymids,	1 0-2 0
Aspidistras, per doz.	12 0-30	1 doz. doz.	12 0-15 0
— specimen, each	5 0-15 0	Ferns, small, doz.	1 0-2 0
Azaleas, per doz.	24 0-12 0	— various, doz.	6 0-12 0
Chrysanthemums,		Ficus elastica, each	1 0-7 6
per doz.	6 0-12 0	Foliage plants, per	
— specimen plants,		doz.	12 0-36 0
1 6-2 6	Gonolias, per doz.		12 0-15 0
Cinerarias, per doz.	9 0-1 0	Hyacinths, per doz.	6 0-12 0
Cyclamens, per doz.	12 0-18 0	Marguerites, p. doz.	8 0-12 0
Dracenas, each	1 0-7 6	Palms, various, ex.	2 0-2 0 0
— various, p. doz.	12 0-24 0	— specimen, ea.	10 6-34 0
Evergreen Shrubs,		Pansies, per doz.	9 0-18 0
in variety, doz.	6 0-24 0	Solanums, p. doz.	12 0-15 0
Ericas, per doz.	10 0-12 0	Tulips, doz.	6 0-9 0

CUT FLOWERS.—AVERAGE WHOLESALE PRICES. s. d. s. d.

Anemone, doz. bun.	4 0-6 0	Orchids,—	s. d. s. d.
Arunas, p. 12 bunches	4 0-6 0	Cattleya, 12 blms.	6 0-12 0
Bouvardias, per m.	6 0-9 0	Odontoglossum	
Carnations, per doz.	1 0-2 0	Orchids, 12 blms.	2 0-6 0
— blooms	1 0-2 6	Pelargoniums, scar-	
Chrysanthemums,		let, per 12 bun.	0 0-9 0
per doz. bun.	2 0-6 0	— yellow, per doz.	6 0-9 0
— doz. blooms	1 6-20 0	Poinsettias, per doz.	
Earliers, per dozen	2 6-10 0	— blooms	6 0-12 0
Hyacinths (Roman),		Pyrophanthus, 12 bu.	2 0-4 0
per doz. sprays	1 0-2 0	Roses (French), per	
Lilac, wh. (French),		doz. blooms	1 0-2 0
per bunch	3 6-5 0	— Ten, per doz.	0 9-1 0
Lily of the Valley,		— chry, per doz.	6 0-9 0
per doz. noons	5 0-8 0	— red, per dozen	1 0-2 0
Lily of the Valley,		Saffron, 12 lbs.	1 0-2 0
per doz. sprays	9 0-1 6	Saffron, 12 lbs.	1 0-2 0
Madagascar Fern,		Tulips, per doz.	6 0-1 3
per 12 bunches	4 0-8 0	— (English), per	
Magnolias, per 12		doz. bun.	1 6-2 0
bunches	2 0-6 0	— (Eng), per	
Mignonette, per		doz. bun.	1 6-2 0
doz. bunches	4 0-6 0	— (Eng), per	
Mimosa (French),		doz. bun.	1 6-2 0
per bunch	1 0-1 6	— (Eng), per	
Nero sun, various,		doz. bun.	1 6-2 0
per doz. bunches	1 6-3 0		

ORCHID-GLOSS IN VARIETY.

VEGETABLES.—AVERAGE WHOLESALE PRICES. s. d. s. d.

Artichokes, Globe,	per doz.	4 0-6 0	Cauliflowers, Curd,	per 11 doz.	11 0-0
— Chiseno (St. clyatscherfata),			Cucumbers, homo-		
per lb.	0 3	0 3	green, select,		
Beans, French,			per lb.	0 3	0 8 0
Channel Is.,			Masturros (Indoor)		
per lb.	1 0-1 6	1 0-1 6	per lb.	0 4	0 6
Market Kidney,			— (b) Foreign,		
per bkt.	1 3-1 6	1 3-1 6	per doz.	0 9	0 9
Carrots, 8 to 10 lb.			Sea-kale, per pun-		
per doz.	1 0-2 6	1 0-2 6	net, 24 to 4 lb.		
Cauliflowers, S.			weight, per doz.	0 1	0 1 0
— M. do, per bkt.			Tomato, Canary Is.		
per doz.	1 3-1 9	1 3-1 9	— loads, per case,		
— Channel Is.,			about 12 lb.	3 0	5 0

POTATOES.

Full supply on Market. Slow trade. No alteration in prices.

FRUIT—AVERAGE WHOLESALE PRICES.

s. d. s. d.		s. d. s. d.	
Apples, Bienenheims, per sieve	5 0-6 0	Grapes, Gros Colmar, 2nd qual.	13-1 6
— Wellingtons, per sieve	5 0-6 0	— Muscat, 2nd qual.	2 0-2 6
— Ord in a y kinds, per sieve	2 0-3 0	— Muscats, English, 1st quality	3 6-4 6
Grapes, Alicante, 1st quality, per lb.	1 3-1 9	Nuts, Cob, per 100 lb.	5 0-55 5
— Alicante, 2nd quality, per lb.	1 0-1 2	Pine-apples, St. Michael, each	3 0-5 0
— Gros Colmar, sorted, p. lb.	1 9-2 0		

SEEDS.

LONDON: Jan. 6.—Messrs. John Shaw & Sons, Seed Merchants, of Great Maze Pond, Borough, London, S.E., write that some little inquiry has this week sprung up for Clover and grass seeds, and a few travellers' orders have already come to town. Values all round exhibit considerable firmness, whilst American cables for Red Ayrick and White come especially strong. In Mustard and Rape-seeds the tendency is upwards. The demand for Peas and Haricots continues disappointing. Canary-seed meets with slightly more attention. For other Bird seeds the sale is just now very limited. English Winter Tares are in good request. Linsed keeps steady.

FRUIT AND VEGETABLES.

GLASGOW: January 6.—Averages of the prices current at market during the past week.—Peas, 6d. per lb.; Apples, 1s. to 2s. per stone; Tomatoes, Gurnsey, 6d. per lb.; do, Scotch, 6½d. do.; Grapes, home, 1s. to 2s. do.; do, foreign, 4d. to 6d. do.; Vegetables—Turnips, white, 2s. to 2s. 6d. per dozen bunches; Swedes, 1s. per cwt.; Savoy, 1s. to 1s. 3d. per dozen; Cabbages, 6d. to 8d. do.; late do., 10d. to 1s. do.; Red do., 2s. 6d. to 3s. 4s.; Cauliflowers, English, 2s. to 2s. 9d. per dozen; do, Dublin, 2s. to 2s. 6d.; Parsnips, 4s. to 4s. 6d. per cwt.; Herbs, assorted, 1d. to 2d. per bunch; Leeks, 1s. 3d. to 3s. 6d. per dozen bunches; Mint, 6d. per bunch; Onions, Dutch, 3s. per bag; do, Portugal, 1s. per stone; do, Globe, 3s. to 3s. 6d. per cwt.; Parsley, 5s. to 6s. do.; Greens, 3d. to 4d. per bunch; Celery, table, 1s. to 2s. 4d. per bundle; do, common, 9d. to 1s. do.; Potatoes, best, 6d. per stone; Carrots, 2s. 6d. to 4s. 6d. per cwt.; Broccoli, 5s. per dozen; Artichokes, 10s. to 12s. per cwt.; Cucumbers, 6s. to 12s. per dozen; Lettuce, round, 6d. to 9d. do.; do, French, 10s. to 1s. do.; Horseradish, 2s. to 2s. 6d. per bunch; Mushrooms, 1s. to 1s. 3d. per lb.; Beetroot, 6d. to 7d. per dozen; Cress, 3d. per basket; Brussels Sprouts, 1s. 3d. to 1s. 9d. per stone; Endive, 1s. 6d. to 2s. per dozen.

LIVERPOOL: January 6.—North Hay Market: Turnips, 19s. to 20s. ton. Potatoes: Imparitors, 1s. 8d. to 1s. 10d. cwt.; do, Main Crop, 2s. 3d. to 2s. 9d. do.; do, Champions, 1s. 10d. to 2s. do.; do, Bruces, 1s. 10d. to 2s. 4d. per cwt.; Turnips, 8s. to 10d. per 12 bunches; Swedes, 1s. to 1s. 4d. per cwt.; Carrots, 2s. to 2s. 9d. per cwt.; Onions, English, 4s. to 4s. 6d. per cwt.; do, foreign, 5s. 6d. to 5s. 9d. do.; Parsley, 6s. to 6s. 6d. per 12 bunches; Cauliflowers, 1s. 6d. to 3s. per dozen; Cabbages, 5d. to 1s. 4d. do.; Celery, 5d. to 1s. 4d. roll—Birkenhead: Potatoes, 6d. to 8d. per cwt.; Grapes, English, 2s. 6d. to 3s. 6d. per lb.; do, foreign, 6d. to 8d. do.; Pines, English, 5s. to 10s. each; do, foreign, 4s. 6d. to 6s. 6d. do.; Muir-rooms, 1s. to 1s. 6d. per lb.

CORN.

AVERAGE PRICES OF BRITISH CORN (per imperial qr.), for the week ending January 2, and for the corresponding period in 1896, together with the difference in the quotations. These figures are based on the Official Weekly Return.—

Description.	1896.		1897.		Difference.
	s. d.	s. d.	s. d.	s. d.	
Wheat	25	2	30	6	+ 5 4
Barley	24	7	24	8	+ 0 1
Oats	13	10	16	2	+ 2 4

ENQUIRY.

"He that questioneth much shall learn much."—BACON.

CUSTARD-APPLE AND MANGO.—Will some readers of the *Gardeners' Chronicle* kindly inform A. S. T. if the plants mentioned above have fruited in gardens in this country?

NOTICES TO CORRESPONDENTS.

BOOKS: *Cyclotems; and How to Grow Them*. Would Mr. F. C. Edwards of 9, Shillocke View, Chapel-town, Leeds, kindly furnish C. B. Woolley & Co. with the address and name of the publisher of his book.

CIDER APPLES: *W. Hill, Brisbane*, Broadleaf Hereford, or Norman; *Cherry Hereford*, or Norman; *Cherry Pearmain*, *Cunmy Hereford*, *Foxwhelp* (old), *Hainsome Hereford*, or Norman; *Kingson Black*, *Strawberry Hereford*, or Norman; *Wisteton Seedling*. The list of cider-making varieties supplied by Mr. John Watkins, Pomona Farm, Hereford, is published in the *Royal Horticultural Society's Quarterly Journal* for November last.

CUSTARD-APPLE AND MANGO: A. S. T. Evergreen in India. The plants would rest during the dry season. As the houses in this country the plants should rest during the period of least heat and light as other tropical plants have to do under cultivation.

DISTANCE OF FRUIT TREES FROM FENCES DIVIDING THE LAND OF DIFFERENT OWNERS: *R. M. New Orleans*. We in this country have no law which fixes the distance at which trees of any kind may be planted from one's neighbour's boundary, although actions at law for damage, loss of light, &c., sometimes arise. In the case of overhanging branches, these may be cut off up to the dividing line, after giving the owner of the trees notice that such operation was going to be performed. The detached branches must, however, be removed by the owner of the trees.

ERRATUM.—Hardy Fruit Calendar, in last week's issue, 12th line from the bottom of the column, read, "Take the tree by the stem, and shake it in an upward direction, in order to let the soil trickle in among all the roots, and bring the latter to within 6 inches of the surface after the remaining portion of the excavated soil has been returned," &c.

LOBELIA INFLATA, &c. *T. L. Willd.* Seeds may be obtained of the larger botanical gardens in the "States," and so far as we can ascertain the trade is not dealt in either the seeds or plants. Seeds of *L. sigillatica*, *L. cardinalis*, *L. erina*, and others of more common employment in the garden, may be obtained of any large seed merchant in this country.

MARKET GARDENERS: *H. O.* If employed solely in market gardening, no licence is required to be taken out for them.

MARKET GARDENERS' COMPENSATION ON REMOVAL: *J. B.* A copy of the Bill of Parliament to which your refer is obtainable at Messrs. Eyre & Spottiswoode, Queen's Printers, Great New Street, Fetter Lane.

NAME OF FRUIT: *George Dixon*, Hoary Morning.

NAMES OF PLANTS: Correspondents not answer *l i i* this issue are requested to be so good as to consult the following number.—*J. H. M.* *Cyrtium falcatum*.—*H. K.* *Epidendrum fragrans*. *A. Young*. *Manelia acuminata*. "Cucumber tree." The leaf and note accompanying have been unfortunately mislaid for a long time.—*L. W. P.* *Elæagnus pungens*.—*J. D.* *Tussilago fragrans*.

NORWEGIAN FISH MANURE: *J. P.* It is sold by the largest horticultural sundriesmen in London, whose names and addresses you will find in the *Horticultural Directory and Year Book* for 1897.

PEACH TREE NOT FRUITING: *G. Henley*. Having taken the one fruiting *G. Henley* was given, the result of which was a poor crop the next year, with great wood production as a result, and but few blooms, and these thrown off. Under these circumstances, there is nothing better than complete transplantation, replanting the roots very shallow, and doing nothing that will have the effect of causing an excessive growth of wood. If the cure seems to be partial, and but few bloom-buds form the first year afterwards, root-pruning or transplantation should be performed just before the leaf falls. Means should be taken to keep the roots from going deeply; and mulch should be laid, and little else beyond a good stiff loam and half-inch bones as a rooting medium. When affording water to the border, let it be a thorough soaking when the soil on probing it shows that it really needs water.

PLANTING ON A SURREY HILLSIDE; SOIL LIGHT LOAM: *G. K.* *Picus Pinaster*, *P. austriaca*, *Holly*. Thorns of all kinds, *Tamarisk*, *Sax Duckthorn*, the common *Lime*, *Wild Crab*, common *Sycamore*, double and single-flowered *Fuize*, yellow and white *Brooms*. Among fruits, the *Quinces* and the *Medlars* would do well, as well as *Filberts* and *Cobs*.

PRIMULA WITH VARIEGATED LEAVES: *H. L.* *Variation* is not common in *Primula sinensis*, in

so far as regards the foliage, although in the case of the flowers white-spotted exists in some varieties, and has become fixed to a certain extent. If the variegation is of a pleasing kind, and you obtain some fine forms of it in succeeding generations of seedlings, it might prove of decorative value.

REPORT UPON FILBERTS, ETC., BY MR. A. F. BARROW: *L. Maurer*. It appeared in the *Journal of the Royal Horticultural Society for the year 1878*, p. 100. Enquiry at the Society's office, 117, Victoria Street, London, S.W., would elicit from the secretary information as to a copy of this report being available or otherwise.

ROMAN HYACINTHS: *W. d. S.* The bulbs show signs of premature forcing, but there are no signs of the formation of any flower in the bulbs, so that they require another season's growth before they will flower.

SEED MUSHROOM-BED MANURE: *W. O.* This kind of manure having lost much of its nitrogen forms only a mild manure, and answers very well as a summer mulching to such plants as do not require much feeding. It would serve as a mulch for young Peach, Plum, Apricot, and Cherry-trees that usually make too much wood if supplied with rich manure in any form; but would scarcely do for aged trees, these requiring mulches richer in nitrogen, ammonia, and potash; and it is therefore not suited for spreading over the roots of Vines growing in outside or inside borders, the Vine being a somewhat gross feeder. It is admirable for manuring land for quick-growing crops, and for early Potatoes, and is much less suited to the Brasicas. It is useless as a hot crop unless the manure is replaced by moisture in the soil, but may be employed with good effect on flower-beds where only moderate leaf-growth is looked for, and is a little richer in manural properties than well rotted leaf-mould.

WATERCRESS: *A. Novice*. Nothing is easier than to grow Watercress if you have running water, or the water can be freshened by the ingress of water from the water company's pipes. Your concrete tank will need to have a layer of loamy soil, covered with gravel to keep it in position in which the plants can grow. If you can warm the water slightly, and cover the tank in frosty weather, the plants will continue to grow all the winter, but it must be remembered that under these conditions greenfly is likely to prove troublesome.

COMMUNICATIONS RECEIVED.—D. T. F. C. B.—B. W.—A. S. O. B.—C. D.—Dr. Klebahn, Hamburg.—C. B. K. & Co.—J. L.—J. D.—F. A. E.—A. G.—G. Henslow.—A. C. F.—M. T.—L. W.—D. M. C.—J. D.—B. R.—D. A. H.—D.—H. H. D.—J. D.—D. B. W.—E. W. SPECIMENS, PHOTOGRAPHS, &c., RECEIVED WITH THANKS.—E. A., Paris.—C. C.—W. M.—H. B.—Mrs. G.

CATALOGUES RECEIVED

- ED WEED & SONS, Worsley, Stourbridge—SEEDS and IMPLEMENTS.
- J. & F. SHARPE, Wisbech, Cambridgeshire—Seed Potatoes.
- H. A. CARTER & Co., 237 and 97, High Holborn, London—SEEDS and IMPLEMENTS.
- FIDLES & SONS, Reading—Seed Potatoes.
- ROBT. VEITCH & SON, 54, High Street, Exeter—SEEDS, &c.
- LOW & STEWART, 6, St. Giles's street, Edinburgh—SEEDS, &c.
- CHAS. SHARPE & Co., Ltd., Cleford, Lincolnshire—SEEDS, &c.
- ROBERT SYDENHAM, Teaby Street, Birmingham—SEEDS.
- J. P. WILLIAM & BROS., Henritzgard, Ceylon (London Agents, F. W. WOOLLEY & Co., 35, Hasington Street)—Tropical Seeds and Plants.
- JNO. LAING & SONS, Forest Hill, London, S.E.—SEEDS, Begonias, and implements.
- W.M. CUTRISH & SON, Highgate, London, N.—SEEDS, Summer-flowering Bulbs, &c.
- F. C. HEINEMANN, Erfurt, Germany—SEEDS.
- TOOGOOD & SONS, Southampton—SEEDS.
- W. H. PAUL & SON, Waltham Cross Nursery s, Herts.—SEEDS and Garden Supplies.
- BIDDLE & Co., Loughborough, Leicestershire—SEEDS, Roots, &c.
- WM. SAMSON & Co., Kilmarnock—SEEDS and Plants.

CONTINUED INCREASE IN THE CIRCULATION OF THE "GARDENERS' CHRONICLE."

IMPORTANT TO ADVERTISERS.—The Publisher has the satisfaction of announcing that the circulation of the *Gardeners' Chronicle* has, since the reduction of the price of the paper, increased to the extent of more than 90 per cent., and that it continues to increase weekly. Advertisers are reminded that the *Chronicle* circulates among country GENTLEMEN, and ALL CLASSES of GARDENERS and GARDEN-LOVERS at home, that it has a specially large FOREIGN and COLONIAL CIRCULATION, and that it is preserved for reference in all the principal Libraries.



THE
Gardeners' Chronicle.

SATURDAY, JANUARY 16, 1897.

GARDENING IN THE EIGHTEENTH CENTURY.

IN Mr. Burbidge's paper on *Reference Books on English Gardening Literature* (*Journal Royal Horticultural Society*, p. 101), he mentions the name of John Laurence, and refers to his book, *The Clergyman's Recreation* (A.D. 1714); but has omitted a much more important work entitled *A New System of Agriculture*, "being a complete body of husbandry and gardening in all the parts of them." It is a folio of 456 pages, in five books, "containing all the best and latest as well as many new improvements useful to the husbandman, &c. : wherein are interspersed many curious observations on vegetation ; on the diseases of trees, and the general annoyances to vegetables and their probable cures," by John Laurence, M.A., Rector of Bishops-Weremouth and Prebendary of the church of Sarum, London, MDCXXXVI.

It commences with a dedication to H.R.H. the Princess of Wales, the frontispiece being an illustration of "A perspective view of H.R.H. the Prince * of Wales' house at Richmond"—the most severely plain and formal demesne it is possible to conceive. Two hundred and eighty pages are devoted to agriculture, in which it may be noted that he includes the cultivation of the silkworm, of which the author writes:—"It is but of late years that the silkworm hath been introduced amongst us here in England; and as yet they are not encouraged," &c.

The second book deals with timber trees, evergreens, and hardy shrubs. Book III, treats of fruit trees, and of the most desirable situations, soils, and the best methods of planting, pruning, &c. ; a chapter being devoted to the cultivation of the Vine.

Of small fruits, the Philbud (Filbert) "is an improved kind of Hazel, and bears a fruit much admired by most, especially as an amusement over a glass of wine after a good dinner." There were three principal kinds of Strawberries cultivated—the Virginia or scarlet, the Hautboy, and the common wild one. Of these he discusses the "true" and "bastard" or male kinds, and gives figures of them. "If helped with a shower of pigeon-dung in the spring, the Strawberry will produce a wonderful crop, and very large fruit." A fruit tree "little known amongst us till of late years" was the Azarole (*Crataegus azarola*), or Neapolitan Medlar. "It is now to be had of most nurserymen about London."

Diseases of fruit trees are then discussed,

and the author thinks that some are analogous to those of man, and names them, measles, dead palsey, gangreen (canker), consumption, yellow jaundice, &c. ; and notes that diseases, by checking growth, tend to cause much fruit, just as he had previously observed, in training fruit trees that boughs bent horizontally are more fruitful.

Book IV. deals with the kitchen garden, and therein are discussed all the vegetables then grown. The author has many pertinent remarks; thus, in collecting Cauliflower seed, "it should be saved from such flowers as are large and white, the seed of two-year-old being the best." "When you head a Cabbage, cut it sloopwise, that the rain may not so easily penetrate the stalk." "Kidney Beans," he says, "is an antient food, yet it is not a century since it was accounted an extraordinary rarity in England. There are above fifty sorts; but the two most remarkable are the dwarf and a white kind, which will grow 6 feet high."

Of salads, besides all we use now, Purslane was "much admired by some," and was "generally entertained in all sallads mingled with hotter herbs." There were two kinds, the green and the golden. Several kinds of Sorrel, Cherville, Bugloss, Cornsalad, Mallow, Elderflowers, Burnet, Sampier (Sampshire), and Seurvy-grass, were all grown as salads. In speaking of Cresses, he says:—"But the Indian Cress, Nasturtium indicum, is what is now most coveted in sallads."

Coming to the flower-garden, the author gives "A Complete Catalogue of flowers usually known in England." This embraces ninety-nine species. Of Lilies there were only four kinds, and the author mentions how some curious persons colour the white Lily by making them absorb through their roots the lees of claret! The Tuberose he speaks of as "now become very common." The Belyedere "is one of the taller sort of perennials" (*Chenopodium scoparium*), now called the Belyedere Cypress. Carnations of many kinds were evidently great favourites. Our Lady's-slipper was cultivated, of which he writes:—"The flowers are sometimes of a pale yellow, and sometimes brown, tending to purple. There is also a smaller sort with a white flower, and another with purple. Pretty as they are, many of these are found in diverse places in Yorkshire and Lancashire growing wild."

The Scarlet Runner Bean was also grown as a garden flower, "whose pods are singularly good, used in pickles. However, it is now adopted for a flower. It is usually employed to adorn walls and arbours."

There are many more interesting features in the book, but enough has been said for a short notice. *George Henslow, Drayton House, Ealing.*

NEW OR NOTEWORTHY PLANTS.

PLANTS FROM ASIA MINOR.

Muscari alpinum.—A charming and rare variety resembling *Muscari comosum*, which is scarcely ever to be found in the trade.

Muscari Botryvi.—An early-flowering species, with deep violet flowers.

Ornithogalum Hausknechtii, n. sp. — A pleasing new variety of dwarf habit, similar to *Ornithogalum oligophyllum*. The large, pure white flowers appear very early in the spring, and grow only a few inches above the ground.

Tulipa pulchella.—A dwarf Tulip, with delicate rose-violet flowers. It is the earliest of all the Tulips, and for this reason, as well as on account of

its ornamental habit, this is a specially noteworthy variety.

All the above species are indigenous to Cilicia and south-east Asia Minor. Their introduction and re-introduction are due to the German botanist, W. Siehe, of Mersina. U. D., Berlin. [By accident some of these paragraphs were assigned to the *Botanical Gazette* in our last issue.]

ABIES ARIZONICA.

Dr. C. Hart Merriam has described (*Proc. Biol. Soc. Washington* 10, 115—118, 1896) a new *Abies* from Arizona. It is from the San Francisco Mountain region, and is remarkable for the colour and character of its bark, being one of the most conspicuous trees on the mountain between the altitudes of 9550 and 9500 ft. The substance of the technical description is as follows:—

"*Abies arizonica*.—About 15 m. high; bark a highly elastic, fine-grained cork, whitish or greyish (usually creamy-white), with irregularly sinuous greyish ridges; leaves of cone-bearing branches thick, subtriangular in section, sharp-pointed at the apex, about 2 cm. long; leaves of lower branches much longer, flatter, blunt and notched at the apex, 2.5 to 3 cm. long; cones dark-purple, slender, medium, or rather small; scales much broader than long strongly convex laterally, purple on both sides; bract (without awn) reaching to or past middle of the scale, its body much broader than long." *The Botanical Gazette* (Chicago, Ill.), November, 1896.

CYPRIPEDIUM × LILIAN GREENWOOD = C. BELLATULUM × C. BARBATUM WARNERI.

Cypripedium bellatulum crossed with any species that has colour, good form and size, produces a brood of seedlings that have fewer throw-aways among them than any other single species, barring always *C. Fairrieanum*. This form is flowering at the present time in the collection of Henry Greenwood, Esq., Haslingden (gr. Mr. Spurg), and it is one of the brightest hitherto described, ranking in quality with *C. Winifred* Hollington and *C. Gertrude* Hollington, and matching the beautiful *C. × Laysenianum*, described in the *Gardeners' Chronicle*, 1896, pp. 522. The cross breeder in this instance has got a fair length of peduncle, the want of which is the blot in *C. bellatulum*; and *C. barbatum Warneri* has given it fine arching petals, and clearness of colour (the last, another point wanting even in *C. bellatulum*), with the addition of an ample spotting on the petaliferous limbs. It has been named after Mr. Greenwood's daughter, and the following is a description of the flower:—

Dorsal sepal roundly ovate. 2 inches wide by 1½ inch long, with a bright clear rose-purple flushing and prominent purplish venation, the subsidiary veins giving a character to the limb; in the basal portion is a crowd of Indian-red spots, the back of the sepal being about as brilliant as the front, and only shading off into green. Inferior sepal about half the size of the dorsal, and nestling close to the pouch, concave, flushed in colour and rose-spotted; petaliferous limbs very prominent, and in this particular as to form, spotting, and finish possibly fully as good as anything yet raised; length of petal 2½ inches, width 1½ inch. The form of *C. barbatum Warneri* is clearly shown here, and points to its being a very valuable subject for the cross-breeder, imparting fine outlines as in *C. Fairrieanum*, and a clearness and whiteness so much wanted by the cross-breeder. I am satisfied now that *C. × Laysenianum*, which is very similar in many respects to the one under notice, differing most in the petaliferous limbs, and which the writer places upon record (*Gard. Chron.*, 1896, ii. p. 522), as of doubtful parentage, was *C. bellatulum* and *C. barbatum Warneri*. The petals of *C. Lilian Greenwood* are bright rose, with very prominent blackish-crimson spots, raised above the surface, and towards the base there are flocks of greenish white, a nice additional detail. The broadly ligulate limbs are undulating, and the colours show up quite to the margin; the pouch has the form of that of *C. bellatulum*, but with a larger orifice, and of deep purplish rose-colour, stopping short towards the extremity, which is of a greenish shade. The folded-in portion is highly ornate, with rose-coloured spots on a whitish

* He became George II. in the year 1727.

surface, and forms a fine rest for the purely reniform staminate, which is coloured and spotted. In growth it is stronger than the seed-parent, and the colour of its leaves is of the clouded green and indefinite yellow of its pollen-parent. J. A.

CYPRIPEDIUM LAWRENCEANUM HYBANUM.

Great credit is due to Norman C. Cookson, Esq., of Oakwood, Wylam-on-Tyne (gr., Mr. Wm. Murray), for his foresight in making the attempt to raise this fine "albino" of C. Lawrenceanum, and several others of a similar nature, true from seeds; and we have the pleasure to afford our readers the opportunity of seeing an illustration (fig. 8, p. 37) of the first to flower of the batch so obtained. In his home-raised seedling, Mr. Cookson has not only preserved the pure white of the original with no other colour than the emerald-green, but he also seems to have wrought improvements in some of the features, the whole flower, and especially the labellum, being larger than in the imported C. L. Hybanum, the staminate larger, and the petals broader. Mr. Cookson hopes to have many successives of a similar class; and in raising these seedlings true from seeds, he had done far better work than that done by so many, viz., raising indifferent hybrids.

SIR JOSEPH BANKS.*

(Continued from p. 15.)

The large collection of Australian plants, as well as the New Zealand species, were described and engraved, but not published by Banks, owing probably to the death of Solander in 1782; but they were taken up by Robert Brown, who succeeded Solander as librarian to Banks, in his *Prodromus Florae Novae Hollandiae* (1808), together with the even more extensive collection, made by him as naturalist to Flinders' voyage, 1801-3. Brown dedicated his work to Banks, and remarked that his name would be found on nearly every page.

After leaving the Endeavour River, they passed through Torres Straits, touching New Guinea and Savu Island on their way to Batavia, to repair and re-victual. By this time sickness had made its appearance among both officers and crew, and the delay in getting their repairs effected at Batavia proved most disastrous. About ten weeks were spent in this unhealthy place, and every man was sick except a very old sail-maker, who got drunk regularly every day! Still, only eight of them actually died there; but, as may be imagined, when they left there on Christmas-day in 1770, the crew were in a weak condition "though in rather better health than they had been a fortnight before."

They had not got far on their way to the Cape of Good Hope, however, before dysentery attacked them, and scarcely a day passed without one or more deaths. Twenty-five deaths occurred before they reached the Cape, and many others were exceedingly ill, including Banks, who "soured the pain of the damned almost." Dr. Solander was taken seriously ill at the Cape, and had to keep his bed for a fortnight, so that practically no botanising was done. With regard to the Dutch ladies, Banks remarks that had he been inclined to marry, he could have suited himself there.

St. Helena was the next place of call. Very little is said about the native vegetation, but among introduced plants English Furze had already become very abundant. No time was lost now in sailing homeward, and Banks landed in good health at Deal, on June 12, 1771.

In conclusion, a few words respecting his subsequent career. In April, 1772, Captain Cook left the Thames on his second voyage round the world, and it was the intention of Banks to have accompanied him, but he was thwarted, after having made elaborate and costly preparations for the voyage. In spite of his keen disappointment, he did his utmost to promote

the objects of the voyage. The Försters, father and son, were appointed naturalists to this voyage.

Banks, accompanied by Solander, made a scientific expedition to Iceland in 1772, having, I may mention, previous to Cook's first voyage, visited and explored Newfoundland. Afterwards, when England was at war with Denmark, Banks used his powerful influence in favour of the Icelanders when they were on the verge of starvation, in consequence of our having captured Danish ships conveying provisions thither; and when Sir William Hooker visited the island in 1808, with letters of introduction from Sir Joseph Banks, he found that Banks was held in the highest veneration as the benefactor of the country. In 1778 Banks succeeded Sir John Pringle as President of the Royal Society of London, a post he held until his death in 1821. During the long tenure of this office he was constantly engaged in the furtherance of science, and although he published very little himself, he was instrumental in much that was done. He was practically the Honorary Director of Kew Gardens, for which he maintained collectors and artists in various parts of the world. He also established botanic gardens in Jamaica, St. Vincent, and Ceylon, and greatly assisted Colonel Kyd in the foundation of the Calcutta garden. Indeed, no one man has done more for botany and horticulture in this country; and it would be a graceful act to provide the thousand pounds, or thereabouts, required to print a small edition of the 700 engravings on copper, executed at his expense and still lying at the British Museum. How much he contributed to the introduction of exotic plants in our gardens may be gleaned from Aiton's *Hortus Kewensis* and other works. The characteristic Australian genus *Banksia*, of the younger Linnaeus, numbers nearly fifty species, of which twenty-one are recorded by Aiton as in cultivation in 1810. W. Botting Hemsley.

VEGETATION OF WESTERN AUSTRALIA.

JAMES DRUMMOND'S admirable description of the vegetation of Western Australia, published in Hooker's *Journal of Botany* nearly sixty years ago, commencing in the second volume, is one of the most valuable contributions to Australian local botany extant, illustrated, as it is, by an exceedingly rich collection in the Kew herbarium, as well as in many others. The presence of such a man in the early years of the colony was a fortunate circumstance for science, because he secured for posterity specimens of many plants that have since disappeared or become extremely rare. I am reminded of Drummond's share in the botanical exploration of that now more flourishing colony, by a perusal of the late Sir Ferdinand von Mueller's article on the same subject in the *Western Australian Year-Book*, briefly noticed in *Gard. Chron.*, 1896, ii. p. 665. Drummond's is the earliest account of importance, and Mueller's the latest. Drummond tells us, that where the town of Perth now stands was formerly a grove of *Xanthorrhoea*; and the Flame-tree, *Nyctia floribunda*, was abundant, and one of the most conspicuous objects in the vegetation. From von Mueller's account we learn that the total number of species of flowering plants and Ferns together, in extra-tropical West Australia, is 3700, whereof no fewer than 2450 have not been found elsewhere. The area in which the bulk of these singular and usually gaily-coloured plants are concentrated, is a triangle, of which Shark's Bay and the western limit of the Great Bight form the base, extending through about ten degrees of latitude. The wealth and variety of the flora may be gathered from a few figures. Of *Acacia* alone, 135 species are enumerated; and the total number of Leguminosae is about 500. Such genera as *Kennedia*, *Daviesia*, *Chortzema*, *Gastrolobium*, *Jacksonia*, *Pultenaea*, and *Boissiaea*, are numerously represented, and the showy *Clianthus Dampieri* and *Erythrina vesperiflora* are among them. The Myrtaceae number nearly 400, including fifty species of *Eucalyptus*. But from a horticultural standpoint the numerous brilliantly and variously-coloured members of the genera *Dar-*

winia, *Verticordia*, *Calycothrix*, *Melaleuca*, *Beaufortia*, and *Calothamnus*, are more prominent, though some of the *Eucalypti* have very showy flowers. *Peperocae* are equally as numerous, and hardly less attractive. *Epacrideae* number about 150 species; herbaceous plants abound also. Thus there are 75 terrestrial Orchids, 30 species of *Drosera*, 150 *Goodeniaceae*, and 60 of *Styliidium*. But my object is to call attention to this flora, now much neglected in our greenhouses. W. B. H.

METHODS OF PROPAGATION.

(Continued from p. 754, vol. xx.)

FOLIAGED BEGONIAS.—The *Rex* varieties, of which *B. Rex* is a type, may be increased by this method, as well as *Gesnera*, *Tydas*, *Aschmannanthus*, *Cissus*, *Impatiens*, *Nageia*, *Piper*, and its nearly allied *Peperomia*, and the handsome stove shrub *Toxicophloea spectabilis*. These may be readily increased by simply pegging down their mature leaves on to moist earth, in a pan or propagating-tray. The useful and elegant *Peperowits* (*Peperomia*) are easily increased by taking their leaves and plunging them petiole downwards into moist sand kept at about 60°, and small plants so obtained are very useful as decorations for the dinner-table, forming, as they do, a pleasing contrast when associated with *Ferns* and *Palms*, and unlike these they seem to be scarcely injured by lighting-gas or dry air. Especially to be recommended in this regard is the pretty *Mignonette*-flowered *Peperomia*, *P. roseaeflora*.

STREPTOCARPUS.

In raising *Streptocarpus* from seed many new and desirable forms and colours will be obtained, and these may be propagated by allowing the plant to dry off somewhat, then removing the older leaves, and cutting them up as directed for the *Gloxinia*, inserting the pieces in sandy peat, and keeping them close for a few weeks, when roots will be thrown out from angles of the nerves and from the mid-rib, and soon small plants will appear, which should be left in the soil till they come to a fair strength, and then lifted and potted.

PERESKIA, ETC.

This was alluded to in my article on "Inside Grafting" as a good kind of stock on which to graft *Actaea*. Epiphyllum varieties may be increased by taking off the leaves, slightly wilting them, and then inserting their petioles in a mixture of sand and peat. This brings us to the *Cactus* tribe, the joints of which all strike freely in light soil kept moderately dry and warm, but these are more of the nature of ordinary cuttings.

The different Sedges, *Cyperus*, &c., now frequently used as decorative plants, are raised from seed, but if the whorl of leaves at the top be taken off, with the inflorescence attached, and this be stuck into a pot or pan of soil, and the pot stood in a saucer of water in the warm-house, the head will soon break up into many smaller ones, each of which will in time become a perfect plant. This method holds good for all the tribe—from the stately *Papyrus* (*Cyperus papyrus*) of the Nile, to the Umbrella Sedge of Madagascar (*C. alternifolius*), and the still smaller varieties, *Japonica* and *viridis*, or *laxus*, all of which are handy decorative subjects. *Experience*.

(To be continued.)

NOVELTIES OF 1896.

(Continued from p. 17.)

STOVE AND GREENHOUSE PLANTS.—Messrs. F. Sander & Co., St. Albans, at the meeting of the Royal Horticultural Society, Nov. 24, received a First-class Certificate for *Draecena Broomfieldi*, a South Sea Islands plant, and which was generally considered one of the finest introductions of late years. At the great show at Dresden also, Messrs. Sander bore off the Gold Medal with *Calamagrostis Carolae*, and during the year they have produced many good things, among which may be enumerated as new or receiving the highest recognition throughout the year: *Asplonia altivirens*,

* Journal of the Right Hon. Sir Joseph Banks, during Captain Cook's First Voyage in H.M.S. *Endeavour*, in 1769-71, to Tierra del Fuego, Otago, New Zealand, Australia, &c. Edited by Sir Joseph D. Hooker.

Anthurium Andreanum Kelley's var.; Sarraecenia Sanderiana and S. Sanderi, Asparagus tenuissimus var. Albanense, Calamus Alberti, Eriocnema Fascinator; some fine sets of foliage Begonias, Sonerilas, several Streptocarpus, two new Dipladenias, and various other good and interesting plants.

Messrs. Linden, l'Horticulture Internationale, Parc Leopold, Brussels, distributed in 1896 many of their fine new plants which had been previously exhibited. Of those specially worthy of mention are Anthurium Scherzerianum, "Géant Sanglant," one of the largest and most brilliant in colour; Adiantum lineatum and A. Clasiannum, two charming variegated Ferns; Zamia Neeffiana, a very stately species; three

since A. Farleyense, which it somewhat resembles, but has the dense clustered pinnae of A. Pacoti; the Asplenium Herbsti of Mr. H. B. May has remarkably fringed fronds, and the Pteris Childsii, and of Mr. F. Childs, Pteris Drinkwateri of Messrs. Stroud & Co., should both make their way in the market.

For the rest, Messrs. Laing & Son still continue to get acceptable novelties in Begonias, of which their new fimbriated section was well shown in B. Duchess of Fife at the Temple show; also Gloxinias, Caladiums, Streptocarpus, and the other things of which they make specialties; and Messrs. Cannell & Sons, Mr. T. S. Ware, and others have shown good new Begonias and other florists flowers.

nials, Messrs. Kelway & Son, and Messrs. Burrell & Co. show many advances; and among Dahlias, Messrs. Keynes, Williams & Co., Messrs. J. Cheal & Sons, Chas. Turner, T. W. Girlestone and others have shown good work; and the Chrysanthemums, which form so important a class of florists' flowers, and which in their season could not be replaced by any combination, have been well recruited, as set forth in Mr. C. E. Pearson's able paper in the *Gardeners' Chronicle*, November 28, 1896.

This hurried review discloses much careful plodding work, and indicates plainly the unflagging interest both of the providers and purchasers of garden plants.

Among the most remarkable or new plants illustrated in the *Gardeners' Chronicle* in 1896, are:—

- Acidanthera bicolor, October 3, p. 393.
- Antirrhinum, Cannell's new dwarf, August 22 p. 221.
- Begonia (Laing's fimbriated), Duchess of Fife, June 6, p. 711.
- Camoensia maxima, November 14, p. 596.
- Ceanothus thyrsiflorus, September 26, p. 247.
- Cornus Kousa, June 27, p. 783.
- Delphinium Zsili, August 29, p. 247.
- Dialymocarpus malayanus, August 1, p. 123.
- Draecena Broomfieldi, November 28, p. 667.
- Hakea multilinata var., January 18, p. 85.
- Lowia longiflora (not grandiflora, as printed in the text), November 28, p. 653.
- Meconopsis cambrica, double yellow, May 30 p. 671.
- Nymphaea chromatella, November 21, p. 621.
- Nymphaea Robisoniana, November 7, p. 559.
- Pussiflora galbana, November 7, p. 555.
- Peony Florizel, May 23, p. 639.
- Prunus pseudo-cerasus semi-plea, April 25, p. 517.
- Rhododendron x Eosa and ancestors, March 14, p. 327.
- Rhododendron x Numa and ancestors, February 1, p. 133.
- Rhododendron Mrs. W. T. Theselton Dyer, June 6 p. 707.
- Rhododendron Schlippenbachii, May 2, p. 561.
- Rhododendron Smirnowii, July 4, p. 15.
- Rhododendron Vaseyi, July 18, p. 171.

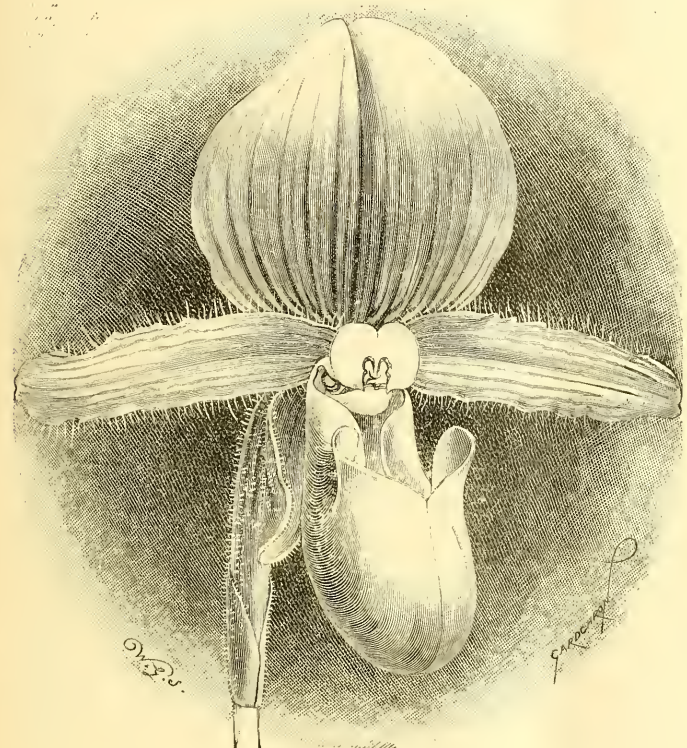


FIG. 8.—CYRTOPODIUM LAWREANUM HYEANUM, FROM MR. COOKSON. (SEE P. 36.)

varieties of Begonia Faureana, as well worthy of cultivation for their elegant habit as for their beautifully-tinted foliage; a splendid set of new hybrid Bertolonias, with diversely ornamented leaves; Caladium adamantium, and C. lilipitense, two new types; several new and handsome Palms; the pretty Dichorizandra angustifolia, Dieffenbachia melegris, Heliconia spectabilis, Labisia smaragdina, Tradescantia dilecta, T. superba, Philodendron Devansyanum, P. robustum, and Davallia Truffautiana (First-class Certificate, R.H.S.), a most lovely Fern, with finely-divided fronds, which on producing spores may probably prove to be no Davallia, but none the less beautiful.

Of other plants which received awards in 1896, Adiantum Bessonianum, which secured a First-class Certificate July 14, is the finest Adiantum introduced

Messrs. Barr & Son have been constant in making a display of herbaceous perennials and bulbs at the Royal Horticultural Society's and other shows, and have secured awards for Narcissus, species of Tulip, Iris, &c., as well as showing many fine old plants which are not so much used in the gardens as they should be.

Among Carnations, Mr. Martin Smith, of Hayes Common, takes the lead with a large number of good new kinds; and Mr. Douglas, Mr. C. Turner, and others, contribute well.

Of tree or perpetual-blooming kinds, Messrs. B. S. Williams & Son, of Upper Holloway, who make a speciality of this class, are sending out C. Queen of the Yellows, and C. John Peter Rugus, a fiery scarlet, both of excellent merit.

In Gladioli and other showy bulbs and poren-

INDIA.

OODEYPORE GARDENS.

It is not very long since we commented upon the damage done in one of our Colonial Botanic Gardens by incursions of elephants, from which our native horticulturists are happily free. In the annual report on the gardens of His Highness Maharani Fatah Singhji of Oodeypore, we read about some equally unwelcome intruders with which the superintendent, Mr. Thomas H. Storey, was called upon to cope. He writes that the "wild pigs gave me a lot of trouble. The larger boars are fierce and determined, not in any way afraid of a man with a spear or stick. One poor fellow was so mauled by a boar that he had to be taken to the hospital, where one of his legs had to be amputated; he is slowly recovering. The pigs are very fond of the Lotus roots; most of the garden-tanks were dry all the hot weather, and the pigs took advantage of this by simply rooting and devouring the roots. The ground in the morning looked as if so many ploughs were at work during the night. The variety of Lotus they are so fond of Nelumbium speciosum.

"Panthers sometimes pay us a visit, one pretty brute took up his abode in the hollow of an old Red Tamarind tree in the nursery.

"Black-faced monkeys are frequent visitors, and are very destructive in a garden. A party of them visited the grafted Mango-grove and helped themselves to the Mangos; they were only, however, able to take one fruit each, and bolted on to the boundary-wall, making faces in defiance at the watchman." Flying foxes, the buncher or taddy cat, squirrels, and parrots are also great nuisances, while field rats and mice have to be reckoned with.

Considering all these drawbacks, it is all the more satisfactory to learn that the gardens are in flourishing condition, and the report in every all that could be wished.

SEEDS FOR INDIA.

In some quarters it has been stated that there is no object in sending seed to India, as the real danger consists in the absence of rain to cause it to grow. In north-western India, according to the *Pioneer Mail*, the seed is wanted as well as the rain. The soil, is required for sowing in the close vicinity of the wells, the little patches thus irrigated becoming productive gardens. The result of recent Government action, therefore, will be to ensure the existence of thousands of flourishing green patches, which might have remained sterile, because the seed was not to be had.

NOTES ON CHRYSANTHEMUMS.

EACH year there is introduced a host of new varieties, and by one grower or another most of these are described as "improvements." To keep abreast of the times, in regard to our collections, a yearly criticism of the list of varieties it contains is a necessity. It is difficult for the inexperienced to choose the good from the bad. A considerable amount of space, time, and attention is required to test even a portion of those sent out. The vendors' description of varieties is sometimes misleading, but confidence may be placed in the leading firms to recommend worthy varieties only.

The largest increase is in the Japanese section; seed is more readily obtained from these, and the proportion of varieties of merit among the seedlings is greater than in the other sections. White and yellow-flowered varieties predominate. In the former group, *Avalanche*, *Stanstead White*, *Middle*, *Marie Hoste*, which were thought so highly of a few years since, are now superseded by *Maitland*, *Western King*, *Maime Ad. Molin*, *Madame Ad. Chatin*, *Mutual Friend*, *Elsie Teichman*, *Niveum*, *Lily Northcote*, and *Lady Byrro*.

Amongst yellow-flowered varieties there are now some magnificent flowers. *W. H. Lincoln*, *Sunflower*, *Thunberg*, *Boule d'Or*, *Golden Wedding*, *Mrs. Spaulding*, *Mrs. J. S. Fogg*, and *Wilfred Marshall*, are superseded by *Modestum*, *G. J. Warner*, *Australian Gold*, *Amiral Avellan*, *Golden Gate*, *M. Pankoucke*, *H. L. Sunderbruck*, *Oceana*, *Edith Tabor*, and *C. W. Richardson*. All these are worthy to be added to the most select collection.

Bronze-coloured *Chrysanthemums* are deservedly popular. For decoration or the exhibition-table this colour is convenient. The best and newest sorts in this section are *Robert Owen*, which has stood the test of time, and still occupies a high position; *Mrs. John Shrimpton*, *Mrs. Hermann Kloss*, *M. Cheneon de Leché*, and *Mons. Ch. Molin*.

What I term pink or blush-coloured varieties, and which represent a pleasing section, are *Rose Wynno*, *Mrs. W. H. Lees*, *Mrs. H. Weeks*, *Grapple*, *International*, *Miss Rita Schroeter*, *Pride of Exmouth*, and *Madame Hoste*. Bright red and purple-coloured varieties are much more abundant now than was the case a few years since, although there is still room for improvement in this type. *Deuil de Jules Ferry*, *Dorothy Seward*, *Eva Knowles*, *Miss D. Shea*, *Mons. Joany Molin*, *Reine d'Angleterre*, *Australie*, *Pride of Madford*, *Mrs. Hume Long*, *Nyanza*, and *President Borel* are some of the best. *E. Molyneux*.

LATE-FLOWERING CHRYSANTHEMUMS.

The smaller-flowered Japanese *Chrysanthemums*, many of which are so useful for decorative purposes, are consigned to the rubbish-heap before their value as such is tested, owing to the demand for varieties producing large exhibition blooms. From this cause it is probable we lose many that would be very desirable as late bloomers. A variety named *Princess Victoria*, of which I had a few cuttings given me last year, proves to be a very valuable one for producing flowers naturally towards the end of December and later. The colour, before fully expanded, is white,

with a lemon centre, passing to pure white when fully developed. Plants once stopped and potted on into 7 and 8 inch pots, carry eight and ten good flowers, and have a sturdy growth, with good stout flower-stems that carry the bloom perfectly erect. *Niveum* is better known, and is a useful variety for late work; plants stopped once produce good flowers at the end of December, but the petals are not so stout and lasting as the preceding variety. *W. H. Lincoln* appears still to be the best yellow late-flowering kind, a batch grown in 8-inch pots and once stopped, is just now in full bloom. This is a well-known variety, of dwarf and erect habit. A good late dark red variety is greatly needed. *C. Irvia*, *Dropmore*, *Maitland*.

[Several of the *Chrysanthemum* nurserymen pay as much attention to promising "decorative" seedling varieties as to mere exhibition kinds. ED.]

CULTURAL MEMORANDA.

EPIPHYLLUMS.

IT is disappointing to see so few *Epiphyllums* in gardens at the present day. They constitute a genus of very handsome, branched, slender, stove sub-shrubs, all natives of Brazil. They are among the most highly-coloured and beautiful of winter-flowering plants, and are extremely useful in decorations at the present season in plant-houses and apartments. Being of a dense trailing or pendent habit, I have found them effective when grafted on a small tree-like stock of *Peskia aculeata* or *P. Bleo*. The species are few, although the varieties are numerous; they are nearly all richly-coloured and attractive. Propagation of the plant is simple, and consists of taking short cuttings in the spring from the branches, inserting them singly in thumb-pots, plunging these in a brisk heat in the propagating-frames. This mode of propagation is not so much in practice as that of grafting. For general decorating work, it is always advisable to have a few plants of the former for use in baskets or in other positions where they are intended to hang down. They succeed best in a compost consisting of good sandy loam, with the addition of a little leaf-soil and mortar rubbish; good drainage is also very necessary, and small pots proportionate to the size of the head should be used. After grafting, the plants should be grown on in heat, until the autumn, and then afforded less water, and allowed a short rest. Start them again in the month of February, and grow them in a light position, allowing them plenty of air towards the latter end of the summer to ripen the young growths. By this time the plants will have formed nice heads, and a few of them may be taken into warmer quarters to flower, it being always prudent to move a few at a time, so as to prolong the flowering season. A temperature of 60° should be afforded in bringing them into flower at the ends of the flattened branches. When in bloom, remove the plants to a cooler position, and follow the same routine. *J. H. C. S., Cheshire.*

THE PROPAGATION OF GRAPE-VINES FROM "EYES."

IF the gardener wishes to fruit his pot Vines in their second year, a beginning must be made early in the new year. Assuming that stout, firm shoots were laid aside in damp soil at the autumnal pruning of the *Hampshire*, *Poster's Seedling*, *Sweetwater*, *Muscadine*, or other desirable quick-ripening Grapes, these may now be cut into lengths of one bud each, making the cut end which will enter the earth somewhat slantingly. Having made the required number of eyes, prepare some sandy loam in which to strike them. Some gardeners use 9-inch pans, others small pots, or pieces of turf with a hole scooped out in the middle. After inserting the eyes, stand them in a forcing-house for three weeks, and after that time plunge the pots, &c., in bottom-heat of 80° in a hotbed with a top-heat of 70°. The operator must take care to place the eyes in the soil with the buds just level with the surface, and to make the soil very firm round about the eye, and if a pinch of sand

be placed about it, there will be less danger of loss from excess of moisture in the soil. Provided the soil was moderately damp when used, no water will be needed for some few days; and I have found excellent results from placing green moss on the surface of the soil and keeping it there till growth has begun in the Vine-eye. With development of growth and formation of roots, the amount of moisture in the soil must be increased, and sufficient air afforded as will prevent damping. When the shoots have reached a height of 4 inches, the pots should be partially raised out of the plunging material, and when the soil has got permeated with roots a re-potting should take place. On this occasion the compost may consist of rich fibrous loam, finely broken lime-rubble and charcoal, and a small quantity of bone-meal, although this last should be sparingly used till the Vines come into their last pots. Before proceeding to repot, the soil must be made as warm as that of the hotbed, otherwise a check may be given which Vines rarely get over, indeed the plants should from first to last be kept steadily growing with abundance of water, and afforded daily syringings. They should be in all respects treated similarly to Vines which are forced into early maturity.

It need only be said here that the Vine shoots should be trained to strings or wires running either vertically or horizontally in a well-lighted forcing-house, and when they have reached a length of 6 to 7 feet the point may be pinched-out at about the third bud beyond the point to which the cane will be pruned back in the autumn. All laterals must be stopped at the first joint, and then allowed to make another joint and be pinched again throughout the season. If the Vines have made good progress the bark will be of a rich brown colour by the end of the month of July, and in August or early in September they should be removed to a south wall, or even against a hedge facing the same point, where they may remain till winter sets in. *H. Markham, Mereworth.*

FORESTRY.

TYPES OF BRITISH WOODLAND.

REGARDING Beech-woods from an ornamental point of view, few have a more characteristic appearance, or vary so much with the season as these. A landscape (if we can call it such) which contains nothing but tall grey stems, and a ground covering of reddish-brown leaves, may not be altogether attractive to some tastes. *Mrs. Poyser* reckoned that the mite had to be bred in the rotten chieve to like it; and perhaps it requires a native of Bucks to appreciate Beech woods at all times, but speaking for ourselves, we should say that from mid-summer to September was the most interesting period during the whole year. The dense foliage shuts out every ray of sunlight, and all those alternating lights and shades which constitute the chief charm of ordinary woodland scenery in summer are absent. The dingy monotonous green canopy, which gets still dingier as autumn approaches, causes an almost twilight shade, beneath which neither bird nor insect life shows itself. But for a fortnight or three weeks in spring, and for a longer period in autumn, Beech woodland scenery defies successful imitation by the most skillful artist, the nearest approach to a Beech-wood in May we ever see being in a *Drury Lane pantomime!* A more delicate green than that of a newly unfolded Beech leaf could scarcely be imagined, and the way in which certain branches suddenly burst into leaf in advance of the majority, is almost unique in its effect on a sunny spring day. In autumn, again, the tints of the Beech are deeper and richer than any other indigenous trees, and have a particularly fine effect on a bright October day. Apart from scenery, certain features of a Beech-wood in autumn rouse feelings which serve to remind us that man is only a (more or less, chiefly less) fine animal after all. The rustle of a thick carpet of dry leaves, the constant showers of these which every breath of wind

brings down, and the rushing noise caused by innumerable wood-pigeons, which one's approach disturbs, inspire us with a wild sense of freedom, which no other kind of wood seems to do. Perhaps a few dormant traits of a prehistoric existence may thus be excited into consciousness by the mere force of instinctive association, just as our domestic animals still retain certain habits which are only occasionally brought out under favourable circumstances.

But to return to our subject, the winter aspect of Beech-woods requires a few words. This is decidedly of an architectural character, in all probability the original type of our colonnades and vaulted roofs of modern architecture. To see this feature of a Beech-wood to perfection, it requires, like "fair Melrose,"

THE ROSE GARDEN AND FERNERY AT WALTON LEA.

We afford our readers in the present issue two views in the gardens of John Crosfield, Esq., Walton Lea, near Warrington, namely, the Fernery and the Rose Garden. The last named (fig. 10) is laid out in a series of circular beds, bounded on one of its sides with a wide border, and is situated, as it is very necessary a Rose-garden should be, in an area fully exposed to sunshine, and yet sheltered by distant trees and shrubberies from destructive winds. The shapes of the beds in their freedom from angles make them admirably adapted for the purpose of growing roses; and one could only desire to hide the soil somewhat by some kind of

feature in a garden that is more than usually full of interesting things. The fernery measures 120 feet in length by 40 feet in width, and it has been formed at different times, as suitable materials could be collected for forming the mounds. Once made and planted, it is kept in good order at a minimum expenditure of labour and time.

THE HERBACEOUS BORDER.

PLANTING HERBACEOUS PEONIES.

THERE are very few subjects indeed that can surpass as garden plants a collection of the best varieties of these Peonies, bold and vigorous in



FIG. 9.—THE FERNERY AT WALTON LEA, WARRINGTON.

to be seen by moonlight, for only then can the eye rest with ease upon the network of branches overhead is dimly reproduced in shadow on the ground below. The outermost twigs, which by daylight obscure the outline of the large branches, are then less noticeable, and we only note what may be termed the skeletons of individual trees, which to the forester at least are their most interesting features. The study of a thick leafless wood by moonlight also enables one to see the effect of light upon the growth of the trees pretty accurately. The relative size of crown and stem can be clearly seen, and the amount of space between adjoining crowns affords a fairly reliable guide regarding the light requirements of the particular species. *A. C. Forbes.*

(To be continued.)

edging plants, as Fairy Roses, R. Paquerette, R. polyantha, Campanula pulla; and, in the case of the larger beds, with *C. carpatia*, tuberous-rooted Begonias, or the homely Mignonette.

The fourteen separate beds contain, as Mr. Kipp's, the gardener, tells us, the following varieties:—Alfred Colomb, Baroness Rothschild, Charles Lefebvre, Francois Michelon, John Hopper, La France, Mdlle. Suzanne Redecanachi, Louis Van Houtte, Margaret Dickson, Marie Baumann, Merveille de Lyon, Ulrich Brunner, Grace Darling, Viscountess Folkestone—some, therefore, of our best old and new roses. As will be observed, the entire display is obtained from dwarfs.

Our other illustration (see fig. 9) is a representation of a part of the outdoor fernery, a pleasing

habit of growth, possessing ample foliage, and massive gorgeous flowers. There are now in cultivation very many excellent varieties, and particularly among the white and creamy-white flowering ones. Some of the flowers are pure white, others again are white with occasional splashes of colour; then, very beautiful are the shades of pink; and apart from these more delicate shades are others of more intense colour. Yet one rarely sees a good collection of them. Sometimes the old double crimson form of *P. officinalis* is seen in big bold clumps, the result of many years' growth, and very fine indeed is the effect of the blooms, sometimes as many as a score or more on a plant. They are sometimes planted in the shrubbery, not infrequently already overcrowded with shrubs, and the soil quite impoverished. In our

place most plants fail, and of all places the thickly cropped shrubbery is the worst in which to plant these Peonies. Deep rooting, and of great natural vigour, they cannot attain anything like perfection unless in deeply worked and very rich soils. I have known their roots descend more than 3 feet into the earth, and when they do this the plants are not likely to suffer in times of drought. In all cases the soil should be deeply trenched, and manure may be added with a liberal hand, but always selecting a position free from the influence of tree-roots. The early autumn is the best time to plant, and preferably the end of August, while their foliage is retained. This is the most rational season to plant, if we study the time and way in which the new roots are produced. Where it is followed large plants seldom feel much of the shift, and flower fairly well in the following year. Not so those that are replanted at any haphazard period, particularly when growth has recommenced, which is of all seasons the worst for moving the plants. If the planting cannot be done at the end of August or thereabouts, an endeavour should be made to get it done before the end of the year. Some nurserymen, who make a specialty of Peony culture, lift a certain number of plants in August or September, with which to fulfil late orders, and lay them in readiness. This produces a sort of time check on the fresh roots that would have been made had the plants remained undisturbed, and plants thus treated invariably give satisfaction when replanted. In my own case, I have found it of service to lay the divided plants in coal-ashes in preference to soil. They keep the plants and crowns plump, and they have the tendency to root afresh so quickly as in the winter soil. Once planted properly, Peonies may remain a dozen years without further disturbance, but require a heavy mulch of manure each autumn. J.

THE WEEK'S WORK.

THE FLOWER GARDEN.

By CHARLES HERRIS, Gardener, Drogheda, Meath.

Planting Deciduous Trees and Shrubs.—Continuing my remarks on this subject, I will next take Magnolias of this section, which are mostly early-blooming shrubs, that do most successfully when planted in somewhat sheltered positions. *Magnolia conspicua* is one of the best and earliest flowering of these. *M. purpurea* and *M. p. Lemé* varieties which are rather later in flowering, but withal very desirable; while *M. stellata* or *Halliana*, a smaller-flowered variety, of dwarfier growth than either; and *M. glauca Thompsoniana*, a summer-flowering fragrant variety. *M. tripetala* is a strong grower, with handsome flowers and leafage, worthy of mention. Among Prunuses, *P. Pissardi* is a very effective variety, which, besides having the advantage of flowering early, has foliage of a dark red, contrasting well with that of other kinds of shrubs. Of other species mention may be made of *Calycanthus floribus*, *C. precox*, *Rhus Cotinus*, *Cereus siliquastrum*, *Viburnum Opulus*, and *V. plicatum*, *Sambucus nigra* aurea, the *Broom*, including *Cytisus filipes*, the Spanish Broom, which blooms so persistently throughout the summer, *Pyrus floribunda*, *P. Malus*, *P. M. bacata* and others, *Ribes sanguinea*, *Diervillea*, and Japanese Acoris. The hardy Ghent and Pontic Azaleas should be planted in quantity where the soil is or can be made suitable for their successful culture. It need not necessarily be peat, as the plants grow freely in any moderately light sandy kind of soil that is free from lime in any form, and which in preparing it has received a good dressing of rotten leaf-mould.

Summer Bedding Plants wintering in cold frames, viz., *Calceolarias*, *Gazanias*, *Violas*, *Antirrhinums*, *Renoncules*, and others, should be afforded abundance of air in mild weather, otherwise they will be much loss of foliage. Great attention will be required in removing decaying leaves, stirring the surface of the soil, and in affording water.

Herbaceous Borders.—There is an advantage in leaving the growths of early-flowering *Chrysanthemums*, and some other plants, as a protection to the stools, but this not being permissible always, a mulching of partly-rotted tree-leaves, spent Mushroom-bed materials, or fine coal-ashes may be afforded instead; and among the more susceptible subjects to be so treated are *Fuchsias*, *Montbretia*, *Zauschneria californica*, *Agapanthus umbellatus*, *Aloysia citriodora*, *Golden Sage*, and *Salvia ringens*. Of border *Chrysanthemums* it is advisable to lift a clump or two of

each variety, place in boxes, and introduce to an intermediate or cool-house to furnish cuttings. No frosts of sufficient severity have as yet occurred to injure any of these subjects, but as severe frosts often sets in suddenly it is well to be prepared. Choice or scarce varieties of *Michaelmas* Daisies may be increased now by potting up young suckers from the old plants, and keeping them in cold frames, or plunged in ashes under some shelter for a month or two until fairly rooted. The flowers of these plants are of so much value in the garden and dwelling that no gardener should be without at least a small collection of them. The old-fashioned varieties of pillar plants are in keeping with herbaceous borders, and when trained to stout stakes they constitute a desirable feature in the background of such borders. The planting of *Roses* should now be finished; bulbs of Spanish and English *Iris* which were planted in the autumn or early winter, but where they are not yet planted, no time should be lost in getting the operation finished. During mild, damp weather, slugs are sure to be troublesome, eating off the young shoots of *Delphiniums* and other subjects, but a dressing of the plants and the soil around with soot, or very fine coal-ashes, will help to keep these creatures away from the plants. If new borders are going to be formed, the ground must now be trenched and got in readiness. If the staple is of a heavy nature, leaf-mould or charred garden refuse may be incorporated with it; taking the opposite course with soils that are light or sandy, trenching in solid farmyard-manure, clayey loam, &c. Existing borders which may be lightly forked in a few weeks later.

FRUITS UNDER GLASS.

By F. HARRIS, Gardener, Eastnor Castle, Leicestershire.

The Piney.—If some ripe fruits are required in May and June, some examples of *Queens* should now be started, choosing those which are showing signs of throwing up, which can be known by the central tuft of leaves showing a tendency to open out. Ascertain the state of the soil, which should be moderately moist, and if a plant is found to be dry at the root, afford it sufficient warm water to moisten the ball throughout. These selected plants should be plunged in a bottom-heat of 50° to 85°, the house having a top-heat of 65° to 70°, and 10° more with sun-heat. Syringe the bed between the plants, and the walls and floors, twice or thrice daily, having regard to the weather. Afford air in small amount on sunny days, doing this very carefully at the present season. As the plants show for bloom, the temperature may be gradually raised, and when the flowers are expanded, a dryer and more buoyant atmosphere should be maintained, so that every flower will set. Afford liberal supplies of tepid liquid manure when the fruits commence to grow visibly in size.

Successions.—These plants should not be excited before the end of next month, but do not allow them on the other hand to get too dry at the roots, or some will prematurely show for fruit. In order to facilitate operations next month, a good heap of potting compost may be prepared, and the following will be found an excellent mixture:—Take the required quantity of good friable loam that was obtained from an old pasture which has been stacked for three or four months, cut or pull the sods into good-sized pieces—shaking out much of the fine soil, spread these out on the floor of a shed, and sprinkle over the soil a good proportion of half-inch bones, and a smaller one of fresh soot; mix thoroughly, and make into a heap in a dry shed till required for use, when it should be placed somewhere to get warmed to the same temperature as the bed in which are the plants to be potted. Have pots and crocks all washed, in readiness.

Cherries and Plums.—Where these fruits are grown under glass, and they are required early in the season, a start may now be made with pot-trees; and as these do not like hard forcing, a temperature of from 40° to 45° at night, with a rise to 50° by day, will suffice at the commencement, and for some two or three weeks. Be sure that the soil in the pots is sufficiently moist, cherries especially being impatient of a soil that is either too dry or too wet. The trees should be lightly sprinkled at closing time, if the day has been sunny; and just before the buds burst afford the house a gentle fumigation in order to destroy any lurking aphid, as fumigation cannot take place till the blossoms are set. Afford air abundantly in favourable weather, close early in the afternoon in fine, and earlier in cloudy cold weather, but do not

allow the temperature to run up beyond 80°, or the fruit will drop.

Tomatoes.—Fruiting plants will now be getting somewhat exhausted still carrying fruit in any quantity. They should be afforded tepid manure-water when root-moisture is required, and a second crop of fruit is looked for, the foliage should be removed, and the stronger shoots tied-in thinly as growth recommences. The flowers should be artificially fertilised in order to ensure a better set than would otherwise be obtained. Pot-off seedlings and cuttings, and place them near the glass; and sow a few seeds at intervals for succession.

Cucumbers.—Winter Cucumbers will now have passed the most critical time; let a moist growing temperature of 60° to 65° at night be maintained, admit a small quantity of air in mild weather, and in order to encourage growth, a light covering of stable-litter placed over the bed will be found beneficial, and care however that the rank anatomical fumes have passed away from it before use. When growth becomes more free, the old foliage should be gradually removed, young growths stopped and tied in thinly, the fruits well thinned in number in order that a regular good supply may be obtained from the plants till young plants come into bearing. A few seeds may be sown and raised with the Melons to fill up probable vacancies among the winter fruiters.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower, Burford, Dorset.

Dendrobiums.—Our plants of *D. Wardianum*, *D. crassinode*, *D. Linawinum* (moniliforme), and the distinct hybrids *D. micans* × *D. Domini* ×, *D. Aléippe* ×, *D. Clio* ×, *D. Aspasia* ×, and *D. Wardianajaponicum* ×, are now showing their flower-buds. In consequence of the present mild weather and the deficiency of sunlight many of these plants have commenced to make new growths from the base of the flowering bulbs. The grower should not be tempted by this to give them very much water at the root or a high temperature, or the young growths will make increased progress, and the flower-buds probably turn yellow and fall. Place such plants in a Cattleya or intermediate-house, upon the lightest side of the house, and keep the compost moderately dry until the buds commence to develop, when each plant may be given a thorough watering, and placed in the lightest available position in the East Indian-house. If the pseudo-bulbs show the slightest tendency towards shrivelling whilst the plant is in bloom, a little water should be sparingly given. Such plants as *D. noble*, *D. Ainsworthii* ×, *D. dulce* × (or *Andrieuxii*), *D. Juno* ×, *D. splendissimum* ×, *D. Leechianum* ×, *D. Schoddeum* ×, *D. Cassiope* ×, *D. Virginie* ×, and the *D. melanodictum* and *chrymidosum* crosses are not so difficult of management; they may, therefore, be removed from the Cattleya-house into greater warmth so soon as the flower-buds are well advanced, and be carefully watered until the blooms are past. *D. crepidatum*, *D. cretaceum*, *D. primumum*, *D. superbum* (macrophyllum), and its varieties *eusummum*, *giganteum*, and *Huttoni*, should be suspended close to the roof-glass in the East Indian-house, and be kept rather dry at the root until the flower-buds appear. Plants of the evergreen section, as *D. densiflorum*, *D. Phyllidiflorum*, *D. Griffithianum*, *D. suavisimum*, *D. chrysanthum*, *D. Schroderi*, and *D. Farmeri*, now resting, should at present be kept in the coolest part of the Cattleya-house, and if the growths were thoroughly ripened they will need little moisture. If, however, they are neglected, and allowed to shrivel, the leaves prematurely turn yellow, and in a short time fall off. The tall-growing species, as *D. fimbriatum*, *D. moschatum*, *D. Paxtoni*, *D. dioxanthum*, *D. clavatum*, and *D. ealeolus*, if placed in a house where the night temperature is about 50° to 55°, and be kept rather dry at the root for six or two or three months, will produce larger spikes than waterer. The beautiful *D. Dalhousianum* enjoys the temperature of the East Indian-house at all seasons, and must on no account be allowed to shrivel for want of water; for though conducive to large spikes of bloom, the after-growth is often deficient in size and strength. The comparatively new *D. Phalenopsis* should be placed in the cooler part of the same house, and no water will be necessary unless shrivelling is feared. The pretty Australian *D. semulum* is now flowering in the cool-house. It should be cultivated in a teak-wood basket or shallow pan, and given very little material to root into. During growth it requires a temperature slightly higher than that which the *Odontoglossum*-house affords, but it must be very carefully watered, as the young growths are liable to

damp off. When these growths are completed, place the plant close to the roof-glass in the cool-house, and keep it perfectly dry at the root until the flower-buds are well advanced. After flowering, and until growths well to bloom, no water before they have been cleared by sponging or fumigation. Cyclanems require very careful watching to prevent injury from thrips. The thrips secrete themselves near the crown of the bulb, and attack the flower-stems as they appear. Greenfly is the greatest enemy of Cinerarias, and to keep the plants clean, incessant care is needed. Continue to afford support to the shoots of Bourvardias in flower, and keep watch against scale. The atmosphere of the house should be kept buoyant, avoid extreme temperatures, and give air on all favourable occasions.

PLANTS UNDER GLASS.

B. G. H. MAYCOCK, Gardener, Latton Hoop, Eton.

The Conservatory.—To maintain a good supply of flowers in this house, cleanliness must be enforced, and a suitable temperature maintained. The plants should not be brought into this house until they are well to bloom, nor before they have been cleared by sponging or fumigation. Cyclanems require very careful watching to prevent injury from thrips. The thrips secrete themselves near the crown of the bulb, and attack the flower-stems as they appear. Greenfly is the greatest enemy of Cinerarias, and to keep the plants clean, incessant care is needed. Continue to afford support to the shoots of Bourvardias in flower, and keep watch against scale. The atmosphere of the house should be kept buoyant, avoid extreme temperatures, and give air on all favourable occasions.

Greenhouse Climbers.—Lapagerias are best trained over corridors, where their peculiar flowers may be seen to advantage. They do best planted out in a prepared bed of three-parts peat to one of loam, with plenty of sharp sand and charcoal, and over efficient drainage. Little pruning is needed until the plants have filled the available space. Being half-hardy they should be kept as cool now as possible. Clematis indivisa lobata is better adapted to trail along wires or up columns. It should be planted out or potted forthwith in good rich loam, and sufficient charcoal to keep it open. Thin out the growths, and keep those remaining free from brown-scale. Plumbago capensis may be planted against back wall or trained over balloons. Give them a mixture of three parts loam to one of peat, and a liberal quantity of sand. They may be pruned hard back each year after flowering. Bignonias venusta is worthy a place in every collection, and when once established it is one of the loveliest of greenhouse climbers, and very free-flowering. It is best seen to advantage if trained up the roof of the house, and some of the growths allowed to hang loosely. It may be planted on the south side of the conservatory, as the plant is fond of sunlight, where it will afford a slight shade to the plants underneath in summer. The plant should be given a good root-run—say, about 3 feet by 2 feet space. Plant in a mixture of one half rough loam, one part of leaf-mould, and one of peat; this will continue good for two or three years if the loam used is not cut too small. During the growing season lightly syringe in the afternoon, and prevent growths from becoming matted together. Train the leaders 3 inches apart, and let the lateral growths be suspended at intervals. After flowering, and when the limit has been reached, a thinning-out of the growths should be done, and this is all the pruning required. Trachelospermum jasminoides, a plant in somewhat easy culture, may be trained along the rafters, or balloon shape, as required. It thrives well in a mixture of half loam and half peat, with plenty of sand; prune-back, and keep well syringed during the growing season. The flowers are very useful for the making of bouquets. The variegated form makes a strong plant, suitable for large vases, if trained for that purpose. Asparagus plumosus, if planted out in the cool house or on the back wall of a vinery or Peach-house, will afford plenty of cutting material, and does not require the amount of heat often given.

General Work.—Gradually lessen the water given to plants of Euphorbia pulcherrima (Poinsettias) and E. Jacquiniflora, that the flowered, and place them in a cooler house, in a position near the glass. In the cool house the specimen plants of Azaleas or Heaths should be turned round once weekly to expose all sides to the light. Never allow the plants to become very dry, and thoroughly saturate the roots at each watering. Large plants of Brugansias (Datura) Knightii should now be pruned hard back, and afterwards washed with some good insecticide, as they are subject to white scale.

THE KITCHEN GARDEN.

By W. PERR, Gardener, Highleaze Castle, Newbury.

Broad Beans.—Make a good sowing of these at once upon a south border, or other warm situation. These Beans do the best in a heavy soil. Early Longpod is a first-rate variety, and should be sown in

rows 2 feet apart and 9 inches in the row. As a preventative from mice it will be well to coat the seeds with red-lead before sowing, and this may be easily done by putting the seeds into a pail and sprinkling them with water, then with red-lead, and shaking well together. For exhibition purposes a few rows of Mammoth Longpod may be sown, and given a few inches more space in the rows. For small gardens, or where small Beans are appreciated, none is better than Beck's Dwarf Green Gun, sown in rows 1 foot apart. Early Mazagan is also a useful sort for early use, and takes up but little space.

Forcing Operations in General.—A suitable quantity of material being in readiness for forming hot-beds, a beginning should forthwith be made with beds for hastening early Potatoes, Carrots, Radishes, &c., to meet the spring and early summer requirements of the family. In the case of hot-bed frames are employed, the beds should be made from 3 to 4 feet thick, putting the materials solidly together as the work proceeds, as the heat is thereby rendered more lasting and less fierce. Let the beds have a margin of at least 1 foot all round the frames, but do not slope the surface much from the back to the front; the boxes being generally made with sufficient slope; and with a level surface inside, the application of water to the plants penetrates the soil more readily.

In selecting varieties of Potatoes, give preference to such early varieties as come into use quickly, and which possess short haulms; and Sharpe's Victor or Sutton's A1 are amongst the best of these. Plant the sets in rows 1½ foot apart, and 1 foot from set to set, and not less than 6 inches deep. An early variety of Radish may be sown thickly between the rows, although they do best when sown in a separate frame. The soil should be rich and light, and made fairly firm before planting; and if ordinary garden-soil be used, a good proportion of well-rotted leaf-mould should be incorporated with it. As soon as the tops appear above the soil, afford air freely on bright days and in mild weather, covering the glass securely at night. The soil for Carrots should be rich and light, preferably of a sandy nature, and if a small quantity of fresh soil be mixed with it, it will be improved; let it be 9 inches in depth, and fairly firm. Early French Horn is the most suitable for frame-work, and may be either sown broadcast, or thinly in drills, drawn at 6 inches apart, and rather less than 1 inch in depth. Thin the seedlings to 2 or 3 inches apart, afford ventilation at all times when the weather is favourable. If a few extra fine roots are required, every almond sown may be sown with Victor's Model, or Sutton's Early Gem, and afterwards thinned to 6 or 8 inches apart. Continue to bring forward successive batches of Rhubarb, Seakale, Asparagus, &c. If a few roots of Rhubarb be dug up and placed in a warm shed, they give a supply for some weeks, and it is a much easier and better method than covering roots in the open ground. Sow Mustard and Cress every week or ten days, and do not cover the seeds with soil.

THE HARDY FRUIT GARDEN.

By H. W. WARD, Rayleigh, Essex.

Planting Raspberry Canes.—The present is a suitable time to make new plantations of canes of last year's growth. Raspberries pay well for generous treatment, and delight in a deep, moderately light, rich soil. Plants that are allowed to occupy the same ground for more than five or six years gradually lose vigour, productiveness, in spite of being annually mulched. It is necessary therefore to make fresh plantations every few years in ground which has been trenched from 18 to 30 inches deep (according to the natural depth of the soil), and in rotted stable-yard or other manure should be incorporated during the process of trenching. If the soil be of a heavy, clayey nature, liberal supplies of leaf-mould should be intermixed with it. The skilful cultivator invariably endeavours to correct and render the rooting-medium (soil) as congenial to the plant's requirements as possible. When the trenched ground has become settled, some selected canes should be planted, from 1 to 6 inches apart, in rows about 1 foot asunder, treading the soil pretty firmly about the roots in planting. Afterwards obtain some rods about 3 inches square, and drive one at each end of the individual lines of canes. Lighter ones may be placed between to strain two sets of galvanised wire upon, and to these the canes should be trained, and care taken to leave room in the ties of bast for the development of growth; and in case of a further settling-down of trenched ground to allow of the canes subsiding

therewith, instead of being hung up, as would be the case when tied tightly to the wires. Then apply a surface-dressing of half-rotted dung, such as that from an old hot-bed, to the depth of 2 or 3 inches between the rows of plants. This mulch will preserve the soil about the roots in a more uniform degree of heat and moisture.

Varieties of Raspberries.—Superlative is a robust grower and a heavy cropper, producing extra large berries of fine quality; Carter's Prolific, Baumforth's Seedling, and Norwich Wonder, are also excellent varieties in all respects. Magnum Bonum is a good white-fruited variety, and Belle de Fontenay is the best autumn-fruited variety that I am acquainted with. The canes of the last-named sort should be cut to the ground now, or early next month, as the fruit is borne on the current year's growth.

Grafts of Fruit Trees should be taken off, tied together and labelled; they may then be laid-in a few inches deep in soil until the time arrives for engrafting them on young stocks of the several kinds. The present is a good time to obtain seedling fruit-tree stocks, and to plant them 6 inches apart in rows 2 feet asunder. These may be worked in the spring and early autumn of 1898. Almond and Brompton plum for Peaches, Crab and Paradiso for Apples, Apricot and plum seedlings for Apricots, common Cherry or Mazzard for Cherries, Prunus damasica and Myrobalan for Plums, and Pyrus communis and Quince for Pears.

THE APIARY.

The Laying of a Queen.—A queen can lay 3000 eggs a day, but not every day. Here are observations on a colony of bees I followed in Palestine from January to December, 1891. As nearly as I could make out, the colony numbered some 10,000 bees on January 1:—

Date.	Daily Average.	Total.
January 1 to 29	100	2,900
..... 26 to February 7	666	11,988
..... 7 to 18	709	16,500
March 2 to 18	2,333	54,995
..... 18 to April 19	2,600	57,200
April 19 to May 21	1,900	40,000
May 21 to June 11	5,411	56,917
June 17 to July 10	2,277	50,694
July 19 to August 3	1,259	39,600
August 3 to 29	469	10,500
..... 29 to September 13	299	4,000
September 13 to October 14	115	3,000
October 14 to November 11	25	1,000
November 11 to December 10	28	1,000
December 10 to 31	0	0
Grand total	.....	320,034

About the same at the end of the season as regards the number—29,000 bees; at all events, this gives us an average of 76 eggs a day for 355 days, or 12,600 eggs a day if we take the honey-flow season from March 3 to August 3. The colony did not swarm, and at the end of the season it was reduced to very nearly what it was in the beginning; 300,000 bees were hatched and passed away; the colony had produced nearly 180 lb. of honey. This honey was taken by the extractor April 10; April 18, Orange-blossom honey; June 13 to 19, chest tree honey; July 10 to August 3, Thyme honey. From 4 "cleannings."

The Coming Royal Show.—Bees and bee products now form an attractive portion of nearly all the agricultural shows held in England, and at the Royal Agricultural show in particular, where everything in connection with bee-keeping may be seen. The *British Bee Journal* announces that the committee of the British Bee-keeper's Association have been enabled to draw up a schedule of prizes which will, no doubt, bring forth keen competition, and impress upon the minds of visitors the great importance and extent of the bee-keeping industry throughout England. The great feature of the show will be a county trophy class, open to all counties in the United Kingdom, and as there will be £35 or more, one silver and four bronze medals, the class will undoubtedly be the most magnificent that has been seen in this country. Classes will also be included for heather honey in comb, and extracted, dark honey, bees'-wax, honey-vinegar, and meal (together five medals and £5) in honey. As prizes will be offered for good samples of honey for 1897 and previous years, it would be as well to hold any stock on hand if the quality is of the very best; but however good the quality might be, unless it is nicely kept, it will be not worth showing, and the price must in consequence be reduced to about one-half.

EDITORIAL NOTICES.

ADVERTISEMENTS should be sent to the PUBLISHER.

Letters for Publication, as well as specimens and plants for naming, should be addressed to the EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith. The Editor does not undertake to pay for any contributions, or to return unused communications or illustrations, unless by special arrangement.

Newspapers.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

APPOINTMENTS FOR THE ENSUING WEEK.

WEDNESDAY, JAN. 20 (Stockport Horticultural Society, Meeting.)

THURSDAY, JAN. 21—Linnean Society.

SATURDAY, JAN. 23—Royal Botanic Society.

SALES.

MONDAY, JAN. 18 Tuberoses, Spiraeas, Begonias, Greenhouse Ferns and Plants, &c., at Prothero & Morris' Rooms.
Great Sale of Border Plants, at Stevens' Rooms.

TUESDAY, JAN. 19 Azaleas, Perennials, Roses, Picotheas, Gladioli, &c., at Prothero & Morris' Rooms.
Japanese Lilies, 70,000 Tuberoses, Gladioli, Continental Plants, &c., at Prothero & Morris' Rooms.

WEDNESDAY, JAN. 20 Palms from the Continent, 1000 Roses, Fruit Trees, Plants, Bulbs, Lilliums, &c., at Stevens' Rooms.
Gloxinias, Clematis, Gladioli, Roses, Begonias, &c., at Prothero & Morris' Rooms.

THURSDAY, JAN. 21 Importations of Lilliums from Japan; Orchids, Border Plants and Roots, at Stevens' Rooms.

FRIDAY, JAN. 22 Continental Plants, Roses, Lily of the Valley, &c., at Prothero & Morris' Rooms.

AVERAGE TEMPERATURE for the ensuing week, deduced from observations of Forty-three years, at Chiswick.—37° 4'.

ACTUAL TEMPERATURES: LONDON.—January 13: Max., 42°; Min., 37°. PROVINCES.—January 13: Highest Temp., 40°; Scilly; Lowest, 34°, Stroudway.

The Horticultural Institute.

No one, we believe, doubts the widespread feeling that a horticultural institute of some sort is wanted in this country. Paris, Berlin, Vienna, Calcutta, Boston, Philadelphia, Ghent, and other cities possess a building suitable for the meetings of their principal horticultural societies. Those whose business it is to visit the Drill Hall or the Aquarium ask sometimes bitterly, "Why should London wait?" The halting response that was made to the scheme proposed by Baron Sir HENRY SCHRODER supplies one reason why we have to wait, and we do not think, nor apparently do our correspondents, that the scheme proposed by Mr. WOOD in a recent issue has any better chance of success. But horticulturists nevertheless owe their thanks to Mr. WOOD for putting before them a scheme. We can hardly suppose the author himself can imagine that his complicated project, as it stands, can be carried out; indeed, he says he is quite prepared to find some parts of his scheme will require modification. Taken, then, as a basis for discussion only, Mr. WOOD's scheme deserved attention. From it something more practicable may eventually be evolved. One thing, we think, is clear, no hall of sufficient dimensions to hold shows of the largest extent could be built in London with any chance of success. Even the Casino at Ghent is not large enough for the quinquennial shows, and annexes, tents, and greenhouses have to be supplied. If this fact be recognised, then it will be seen that a smaller hall than that projected by Mr. WOOD would suffice for ordinary occasions, whilst larger

shows might be accommodated elsewhere, as they are now. Round this smaller hall might be grouped rooms which would suffice for meetings of the minor societies, for the Lindley Library, and other horticultural purposes without the necessity for permanent exhibitions and shows of objects not relevant to horticulture, and which, we imagine, would quickly degenerate to the music-hall level. But even on this smaller scale, site, funds, management would have to be provided. Mr. WOOD says nothing about the site, but we do not think that would be an insuperable difficulty. As to the funds, we confess Mr. WOOD's ideas seem to us more ingenious than practicable, and knowing by experience the difficulty there is in getting funds even for our horticultural charities, we have very grave doubts whether money would be forthcoming in sufficient amounts to maintain, much more to erect the structure. Then, as to the management, would or could the Royal Horticultural Society undertake such a task, and if it did, would there not be the usual amount of jealousy and criticism? and would not the special provincial societies do as they do now, to a great extent, hold aloof, and, as the phrase is, "run their own coach?"

In spite of these forebodings, which none would be more cordially glad to see annulled, than ourselves, we hope the central idea will be kept in mind. Free but relevant discussion will soon show what is practicable, and what is not—the ground will be cleared, and the duty of horticulturists to their profession will once more be put to the test.

Gardeners' Royal Benevolent Institution.

What ever we may think of Mr. WOOD's scheme for a grandiose hall for horticultural purposes, there can not be the least doubt as to what our duties to the gardening charities are, and no one will question the propriety of the appeal which we have now the pleasure to lay before our readers, in full confidence that it will be responded to—

"The extraordinary event—unique in our country's history—of Her Majesty's completing in June next the sixtieth year of her beneficent reign, demands from us all, I venture to suggest, some special effort testifying to our deep thankfulness for the wonderful progress made in every way by our nation during the past sixty years, and for the many blessings we now so freely enjoy. Animated by this feeling, the Executive of the Gardeners' Royal Benevolent Institution (of which our beloved QUEEN has been the Patroness for forty-five years) has determined to endeavour to celebrate so remarkable an occurrence by establishing a special fund to be called 'The Victorian Era Fund,' the income from which shall be devoted to affording temporary assistance to those applicants who are waiting to be placed on the Pension List, and who have been subscribers to the Institution, every friend of which it is confidently felt may be relied upon to do their utmost to help raise a sufficient sum the interest of which shall be devoted to the benefit of those who, when in a position to do so by becoming subscribers, did what they could to assist others. The Committee consider that a sum of at least £5000 will be required to enable them adequately to carry out what they propose; and this in addition to the amount required to meet the usual yearly outgoings of the Institution, which exceed £3000 (the sum paid at the present time in pensions alone being £2840). I, as chairman of the Committee, appeal to every gardener [and garden lover] in the country to aid us in raising this sum—

1st. By giving what he can himself, and urging his brother gardeners [and friends] to do the same.

2nd. By earnestly appealing to all lovers of gardens to contribute something to this object.

And I feel certain that if every gardener [and friend of gardening and gardeners] will do what he can, the proposal of the Committee will be fully realised.

"Any further information or details of the scheme will be most readily given either by myself or by the secretary, Mr. GEORGE J. INGRAM, 50, Parliament Street, London, S.W., who will also be pleased to forward to any applicant collecting cards or boxes.

"Earnestly begging you to give the matter your warmest support.

"I am, &c., HARRY J. VEITCH, Chairman of Committee and Treasurer."

Separate appeals will be sent to gardeners and to amateurs of all degrees, but the insertion of a word or two relieves us from the necessity of publishing both. The annual meeting is in progress as we write these lines, and the fifty-eighth anniversary festival dinner will be held at the Whitehall Rooms, Hôtel Métropole, on Wednesday, May 26, 1897, the Right Hon. Lord ROTHSCHILD, in the chair. The following donations, &c., are already promised:—

His Grace the Duke of Westminster, President	£100 0 0
The Baron Schröder, Vice-President	200 0 0
G. Czarnikow, Vice-President	50 0 0
N. N. Sherwood, Trustee (in memory of Emma Sherwood)	200 0 0
Harry J. Veitch, Treasurer	250 0 0
W. Sherwood (in memory of Emma Sherwood)	100 0 0
E. Sherwood	100 0 0
May Sherwood	100 0 0
George Munro	100 0 0
James Veitch & Sons	250 0 0
Thomas Bank Iron Company	21 0 0
A. Watkins	10 0 0
James Hudson	5 0 0
J. W. Seden (Life Subscription)	10 0 0
J. Seden	2 2 0

LINNEAN SOCIETY.—On the occasion of the meeting held on December 17, Dr. A. GUNTHER, F.R.S., President, in the chair; the President directed attention to the very handsome clock recently presented to the Society by Mr. FRANK CRISP, and now fixed over the doorway of the Meeting-room, and a cordial vote of thanks to Mr. CRISP was unanimously recorded. MESSRS. JAMES GREEN and J. H. GARDINER exhibited a series of sciagraphs of British Batrachians and Reptiles in which the details of the skeleton were very sharply defined, and its relation to the external outline well shown. Mr. J. E. HARTING exhibited a supposed hybrid between the common brown hare (*Lepus timidus*) and the Irish hare (*Lepus variabilis*), recently obtained in Carnarvonshire, where the latter species had been introduced in 1878. He compared the specimen in question with examples of both the above-named species, and contrasted their distinguishing peculiarities, pointing out the intermediate characters exhibited by the supposed hybrid. His remarks were criticised by the President, who thought that too much stress should not be laid upon external appearance and colour; that the question of hybridity should rather be determined by comparing the relative measurements of the leg-bones; and that the Irish hare should be compared in detail with the hare of southern Europe (*L. meridionalis* or *mediterraneus*). Professor HOWES drew attention to NATHAN'S observations upon the Peyer's patches of the Leporides, and pointed to the necessity for examination of the viscera. Mr. BARRETT HAMILTON, who was present as a visitor, was included to regard the supposed hybrid as an example of the ordinary brown hare turning white in winter, hitherto unnoticed in this country. Mr. THOMAS CHRISTY inquired what position the so-called Belgian hare or Leporine occupied in relation to the question of hybridity; and was answered that the popular notion of that animal being a hybrid between the hare and rabbit was fallacious, since it was nothing more than an overgrown tame rabbit coloured like a hare. Mr. E. B. WOODWARD gave a demonstration, illustrated with lantern-slides, of Mons. F. BERNARD'S

researches into the development of the hinge of bivalvo shells. On behalf of Dr. A. J. EWART, a paper was read in continuation of one previously communicated by him, and entitled: "Further Observations on Assimilatory Inhibition." Mr. W. C. WORSDELL gave the chief facts of a paper dealing with the "Development of the Ovule of *Christisonia*, a genus of the *Orobanchæ*." Referring to Professor Koch's detailed account of the development of the ovule of *Orobanche*, he remarked that *Christisonia* as a parasitic plant was of such interest, and differed so much in its vegetative structure from *Orobanche*, that it seemed to be worth while to record the facts of its embryological development. A brief description of

potium from a hypodermal cell; the casual occurrence of a double archesporium; the absence of tapetal cells; the division of the archesporium into four cells, the lowest of which subsequently grew into the embryo-sac; an anomaly was observed in one ovule, in which two of the uppermost cells persisted as rudimentary sacs, in one of which the nucleus had divided into four; the large size of the syncyga, as compared with that of the corresponding cells at the antipodal end; the outgrowth of the embryo from the ovum as an elongated unicellular structure; the fusion of the polar nuclei; the early stages in the formation of the endosperm; the sequence of cell-divisions in the developi of embryo,

"On the Chalcidide of the Island of Grenada, West Indies." This paper, communicated by Mr. F. D. GODMAN, F.R.S., F.L.S., dealt with the Chalcidide collected by Mr. H. H. SMITH, under the auspices of the British Association Committee for investigating the Fauna and Flora of the West Indian Islands. The collection consisted of from 600 to 700 specimens, and comprised six new genera and seventy-two new species, which were described. The geographical relationships of the group were discussed.

— The next meeting of the Society will be held on Thursday, January 21, at 8.0 P.M. precisely, when the following papers will be read: —Dr. G. ELLIOTT SMITH, "On the Origin of the



FIG. 10.—ROSE GARDEN AT WALTON LEA, WARRINGTON. (SEE P. 30)

the vegetative parts of the plant was then given; these were: the rhizome-like, anastomosing network of roots bearing tubers at intervals, from which latter the exogenously-formed haustoria are produced. The haustoria penetrate the roots of the Bamboo or *Strobilanthes* upon which the plant is parasitic. The lateral roots and the stems are produced endogenously; the latter grow rapidly, and after producing the flowers die, at the end of the season. The flower resembles, in its main features, that of *Orobanche*. The ovary in one species is bicellular throughout, in another species it is bicellular below, and unilocular above; the placentae are two in number. By the aid of blackboard drawings the author then described the development of the embryo-sac and the embryo. This was shown to follow essentially the same lines as in *Orobanche*. Its main features were:—the origin of the arches-

and the irregularity of these; the extremely rudimentary character of the embryo as compared with ordinary Dicotyledonous plants, this being perhaps even more pronounced than in *Orobanche*. Finally, it was pointed out that in a great many plants the vegetative and the reproductive organs have not always, by any means, a parallel development. A striking instance of this was to be seen in *Christisonia*. In this plant the vegetative structure was of a very abnormal and reduced type, and remarkably different from all other *Phaeogogms*; while, on the other hand, the structure and development of the embryo-sac had remained essentially of the same normal type as in the majority of Dicotyledons. This paper was criticised by Dr. D. H. SCOTT, who testified to the importance and interest of some of the facts established. On behalf of Dr. L. O. HOWARD, entomologist to the U.S. Department of Agriculture, a paper was read

corpus callosum: a comparative study of the hippocampal region of the cerebrum of *Marsupialia* and certain *Cheiroptera*; Dr. J. GILCHRIST, "On the Minute Structure of the Nervous System of the Mollusca." Exhibitions:—Dr. JOHN LOWE, Fossil Antlers of Red Deer from the Cambridgeshire Fens; Messrs. H. and J. GROVES, New Species of *Chara*; Mr. HORACE MONCKTON, New Variety of *Limnæa pregra* from the ponds at Howickton Fishery, Stirling, N.B.

THE ROYAL GARDENERS' ORPHAN FUND.—At a meeting of the executive committee held on the 8th inst. at the Horticultural Club, Hotel Windsor. Mr. WILLIAM MARSHALL presiding, when the following special donations were announced:—Altrincham Gardeners' Mutual Improvement Association concert, £30 10s.; Mr. H. J. JONES, Ryecroft Nursery, Lewisham, box in Chrysanthemum Show House

£10 15s.; Reigate Chrysanthemum Society, £10; Scottish Horticultural Association, £5 5s.; Mr. J. H. VALLANCE, moiety of receipts for sale of flowers at the Bristol Chrysanthemum Society's Show, £5 5s.; Mr. J. B. STEVENSON, Chine Gardens, Bournemouth, box, £1 9s. 3d.; and Mr. J. Day, Galloway, Gartleston, N.B., box, £1 1s. The *bona fides* of the various children candidates for the benefit of the fund, thirteen in number, were examined and passed, and in consideration of the fact that the present year would see the celebration of the sixtieth year of the reign of the QUEEN, and also be the tenth year of the existence of the fund, the committee unanimously resolved to recommend to the general meeting that the *whole of the thirteen candidates be placed upon the Fund without election*. It was resolved that the annual general meeting should be held at Anderson's Hotel, Fleet Street, E.C., on Friday, February 19, at 4 P.M. The annual dinner will take place at the Hotel Cecil on Friday, April 30, Alderman Sir JOHN WHITTAKER ELLIS, Bart., in the chair.

BOTANICAL MAGAZINE.—The plants figured in the January number are:—

Aristolochia clypeata, Andr .—A handsome stove climber, of quaint form, and large, dull, purple-spotted flowers. Introduced from New Granada by Wallis; t. 7512.

Cynoglossum nervosum, Benth.—A West Himalayan herbaceous plant, with oblanceolate hairy leaves and loose branching spikes of blue flowers; t. 7513.

Berkheya Adami, Hook. fil.—A very handsome Thistle-like plant, with heads of yellow flowers. Native of the Transvaal, whence it has been sent by Mr. Adlam to Kew; t. 7514.

Crotola Elsterii, Bennett.—A shrub, native of the Bahamas, and interesting as being the source of Cascarilla bark, used in the manufacture of incense, and for similar purposes; t. 7515.

Bignonia bucinatoria, Mairet.—The B. cherera of Lindley. Native of Central Mexico, flowered at La Motola; t. 7516.

"THE ROSARIAN'S YEAR-BOOK."—Rosarians look out for this little book, finding in it always something to interest them. The present issue contains a portrait and sympathetic account of Mr. C. J. GRAHAM; an article on Tea Roses, by Rev. FOSTER MELLIAN, and a similar one on hybrid perennials by Mr. PIPER. The editor reviews the principal events of the past year, and the doings of the National Rose Society. Mr. GEORGE PAUL descants on the evolution of the hybrid Tea Rose. Mr. MAWLEY indulges his taste for statistics by tabulating the varieties that have most frequently received a medal from the National Rose Society. Out of 357 blooms of 84 varieties, it appears that "A. K. Williams" has received a medal twenty times, La France eighteen times, Mrs. John Leing seventeen times, and twenty-eight others have been "be-medalled" from fourteen times down to twice. Comtesse de Nadailac stands first among Teas with twenty-six medals, and is well ahead of all others of its class. Mr. MAWLEY also contributes his usual notes of the weather from August 1, 1895 to July 31, 1896. It is a pity that this valuable record should not have wider circulation, as it interests not Rose-growers only, but all classes of cultivators, agriculturists or horticulturists.

ROYAL BOTANIC SOCIETY OF LONDON.—At a meeting of this Society, held last Saturday, Dr. ROBERT BOXALL in the chair, Mr. E. C. VAN NOTFEN POLE and Mrs. EDWARD SCOTT were elected Fellows, and the names of five others read for ballot at the next meeting. The secretary, Mr. J. B. SOWERBY, showed at the meeting stems of the Egyptian Papyrus, taken from the plant growing in the Victoria Water Lily tank at the gardens, which has this year attained extraordinary dimensions, forming a clump 7 feet in diameter, with stems 14 feet long, and 2½ inches at the base. From the white pith of which the stems are composed, the ancient Egyptians made a paper remarkable for its durability—simply slicing the pith up into flat strips, and laying them side by side until a sufficient length was obtained. Under pres-

sure the pieces adhered together, forming a perfectly smooth, even sheet, which could be written upon and rolled up without further preparation. He compared paper made in this way from plants grown in the gardens with a fragment taken from an Egyptian tomb, and, according to Dr. BIRCH, at the least 3000 years old, the only difference between the two being the darker colour of the older specimen. Major CORTON said the plant, though once abundant, was now extinct in Lower Egypt.

FERDINAND VON MUELLER was a most indefatigable correspondent, says Prof. MACOWAN. If he could get any information out of you, or if he could do anything for you, it was just the same—he gave you no peace till the thing was done. South Africa, from its similarity in climate to Australia, which he knew so well, specially interested him, and he prided himself, not unworthily, upon having been the means of dotting the treeless plateaus of the Cape with the varied species of Eucalyptus, and our sandy flats with the Golden Wattle. In the course of a correspondence of some twenty-five years' duration with the writer of this memorial notice, perhaps the most characteristic letters were those expressing his enthusiastic delight at the success attending the acclimatisation of the Atriplex Nummularia, or Australian Salt-bush, at Van Wyk's Vlei, from his little packet of half-a-dozen seeds, by the care and assiduity of Mr. EDWARD ALSTON. And when, subsequently, he was informed that that gentleman had in one year distributed gratis two thousand pounds' weight of the seed of this best of brass-fodder plants, his reply was a veritable banquet of rejoicing. Nor was the Cape by any means the only place to which his good offices extended. Wherever similar conditions of climate to those of Australia prevailed, he was sure to find out men like-minded with himself on cultural matters, and push the interests he had so much at heart.

BERLIN.—The oldest horticultural society of Germany, the Verein zur Beforderung des Gartenbaues in den Preussischen Staaten, will celebrate its seventy-fifth anniversary by a grand general exhibition to be held from April 28 till May 9, and in which foreigners are invited to take part. In the programme and its supplement, announcement is made of many valuable prizes, amounting to 50,000 marks (£2500), as well as many honorary prizes, amongst which is a very valuable prize offered by the EMPEROR. It would be of the greatest interest if British growers would exhibit on this occasion, especially Orchids, Chinese Primulas, Cyclamens, &c., to see if the English strains of the latter are better than the German. Entries must be made before March 1. Address to the Secretary-General, Berlin N., Invalidenstrasse, 42.

HESSDORFFER'S MONATSHEFTE.—The third number of the new German gardening paper *Hessdorffer's Monatshefte* has been recently published, and we notice with pleasure the interesting and valuable articles it contains. Besides many other articles, notes, and illustrations, it contains an extensive and exhaustive description of the new hardy Cactuses, collected by Mr. Purpus in Colorado, with three photographic illustrations taken from the collection cultivated by his brother in the Botanical Garden at Darmstadt. They have been kept outside for the last two winters without any covering, and are growing and flowering very satisfactorily.

ISLE OF WIGHT HORTICULTURAL ASSOCIATION.—The annual general meeting was held at Newport on the 9th inst. After the election of committee, &c. for the ensuing year, a short paper written by Mr. W. CUMMING of Parkhurst Forest, Isle of Wight, on "Pruning Hard-wooded Trees" was read by the chairman, Dr. GAOEY, B.A., J.P. There was a lively discussion upon the subject, as some of the district councils in the island are requesting people to cut their trees which overhang the highway. This, it is thought, will destroy the beauty of the island, and eventually its prosperity, which mainly depends upon visitors who are attracted

by the beauty of the island. The secretary introduced the association almanack, which met with much appreciation, and is likely to be of great benefit to gardeners, and to visitors to the garden isle. Mr. J. MERRITT, gardener to H.R.H. PRINCESS BEATRICE, Osborne Cottage, staged two fine collections of Violets, of the varieties, Princess of Wales and Princess Beatrice; many of the blooms exceeded 1½ inch in diameter, and were awarded a Certificate of Cultural Merit.

THE PROCESS OF FERTILISATION formed the subject of an illustrated lecture by Mr. W. W. PERTIGREW, before the Cardiff Gardeners' Association, on January 5. The President (A. THOMAS, Esq., M.P.) presided over a company of about sixty members. A class for the study of botany was opened in connection with the Society upon the same date.

JUBILEE OF A NURSERY FIRM.—In 1847 the late Mr. JOHN WALKER established a nursery and seed business at Thame, Oxon. Though in his youth trained for the grocery trade, his love for flowers and their culture, and the success he achieved as an exhibitor induced him, while remaining a grocer, to start a business as a florist, commencing with about twenty poles of ground and a two-light frame. Soon after he found it necessary to devote his whole time to the venture, and he was enabled in the course of years to build up an extensive business. On his death a few years ago he was succeeded by his son, Mr. STEPHEN WALKER, and this year witnesses the jubilee of the foundation of the firm.

"LA SEMAINE HORTICOLE."—While we are thinking of diamond jubilee celebrations, and preparing for a year of unwonted activity, our Belgian neighbours are very busy with the great exhibition to be held in Brussels, whilst the horticultural world in particular is stirred by the announcement of the issue of a new weekly horticultural journal, to be called *La Semaine Horticole*, and modelled on the plan of the *Gardeners' Chronicle*. The new venture will be issued on January 30, under the auspices of M. LUCIEN LINDEN, and with it will be incorporated the *Illustration Horticole* and the *Journal des Orchidées*. We heartily wish our futuro contemporary a prosperous and useful career.

GHENT.—Certificates of Merit were awarded at the last meeting of the Chambre Syndicale:—To *Odontoglossum crispum* Petersii, O. Wilceanum albens, O. crispum macrophyllum, O. crispum regale, O. crispum album, and a group of new *Odontoglossums*, all from M. JULES HYE; to *Cattleya chocoensis*, from M. JULES DE COCK.

ALPINE PLANTS.—A "prix d'honneur" at the recent Geneva exhibition for alpine plants was awarded by the jury to M. H. CORBEVON.

"MY GARDEN DIARY."—Messrs. SUTTON & SONS, Reading, have published a dainty little diary under the above title. The title-page is very attractive, and the text of the book contains just the kind of hints the amateur wants. Good taste reigns throughout.

MORA NUTS.—Mr. CHRISTY, in his *New Commercial Plants and Drugs*, n. 12, publishes an account of the Mora Tree of British Guiana, based on SCHOMBURGK's paper in the *Journal of the Linnean Society*. The trees are remarkable for the wide buttresses which flank the lower end of the stem. Latterly, it appears, the seeds have been introduced as Cola-nuts, with which, however, they have nothing to do, neither do they contain Caffein. The Mora is a leguminous tree, by name *Dimorphandra Mora*.

THE NATIONAL DAHLIA SOCIETY.—At a meeting of the committee of the above society, held at the Horticultural Club on the 12th inst., the death of the late president of the society, the Rev. CHARLES FELLOWS, was announced, and a vote of condolence with his relatives was passed. Mr. T. W. GIRDLESTONE, the secretary of the society, having expressed a desire to retire from that office, he was unanimously elected president, and it was announced that Mr.

WILLIAM ROBINSON had accepted the post of vice-president. Mr. J. FRANK HUDSON, Gunnersbury House, was elected hon. secretary, in the place of Mr. GRIDLESTONE. In reply to a communication from the manager of the Crystal Palace, the committee resolved that in the event of the Crystal Palace authorities lending assistance, a special class, commemorative of the 60th year of Her Majesty's reign, should be included in the schedule of prizes at the next exhibition.

"**LE CHRYSANTHÈME.**"—Those who would appreciate a clear and readable account of the Chrysanthemum, its history, physiology, and cultivation, should, if they have the chance, read M. H. DE VITTOIRI's essay on the subject. We say, if they have the chance, for the essay is not published separately, but may be read in the *Revue Générale Internationale Scientifique*, &c., March, 1896.

A GOVERNMENT ORCHARD.—The French, relates our contemporary, *The Bits*, of January 9, is the only European Government that maintains an orchard for the special cultivation of the Apple. It is in the garden of the Luxembourg, in a snug corner, and well protected by being completely walled in. Two hundred and fifty varieties are cultivated, and hither come the pomologists of France for cuttings. When the fruit in this Government Apple-orchard is ripe it is divided into four lots. The finest fourth is sent to the President of the Republic, and figures at the official dinners of the season. The second is for the prefect of the Seine; the third for the Military Hospital in Paris; and the fourth goes to the large restaurants of Paris.

STOCK-TAKING: DECEMBER.—The closing month in 1896 tells a pleasant story in the pages of the Trade and Navigation Returns for December—our weekly record of the fall in grain quotations heralding the approach of a good record in the first week of 1897. Against a few and trifling items of decrease in importations has to be set the great fact that, as compared with December, 1895, there is a nett gain of £6,542,847; the total for last month being £48,503,595, as against £36,961,248 for December, 1895. Duty-free articles figure largely here—cereals showing the largest increase. Wheat shipments were larger by 2,325,400 cwt., and by £1,296,752 in value—the United States and Russia sending about twice as much as at the same period in 1895; flour (American and Canadian) showed an increase of £477,059; Barley was in excess by £229,000—this latter from Russia; and that country and the United States between them sent oats to the value of £266,918 over last record. Maize being furnished by America and Argentina to the value of £260,000 over the amount for December, 1895. Apples went up £170,000; butter, mutton, and beef, show a great increase. In dutiable articles—tea went up £150,000; tobacco, £100,000 ditto; textile material increased £2,149,000. American cotton contributing £1,974,000—wool going up £511,000. But this is sufficient for the day. The following, from the summary table of exports, deserves its usual place here:—

IMPORTS.	1895.	1896.	Difference.
	£	£	
Total value	36,961,248	43,503,595	+6,542,847
(A.) Articles of food and drink—duty free	11,672,910	14,864,030	+3,191,120
(B.) Articles of food and drink—dutiable	2,328,222	2,501,614	+173,392
Raw materials for textile manufactures	8,203,741	10,352,499	+2,148,758
Raw materials for sundry industries and manufactures	3,416,214	3,521,383	+105,269
(A.) Miscellaneous articles	1,315,159	1,969,389	+654,221
(B.) Parcel Post	68,922	52,318	-16,604

Respecting sugar, whilst a Commission is inquiring into the causes of the falling off in the production of sugar in the West Indies, the planters out there are endeavouring to better their condition by placing their

eggs into more baskets than one, are adding to the number of their crops—various fruits as Oranges and Bananas, being now brought forward, with what success is not yet quite plain; the plan has already succeeded in Jamaica—a judicious selection will doubtless produce a paying result, the "capacity" of the United Kingdom for fruit being something astounding; and here may be given our usual excerpt from the figures relating to the imports of fruit, roots, and vegetables for December:—

IMPORTS.	1895.	1896.	Difference.
	£	£	
Fruits, raw:—			
Apples bush.	306,040	1,186,464	+788,415
Cherries .. .. "	..	..	..
Plums .. .. "	..	..	..
Pears "	8,588	8,631	+43
Grapes "	2,858	7,423	+4,564
Unenumerated "	47,173	53,734	+6,561
Onions "	448,727	452,235	+3,508
Potatoes cwt.	32,595	32,147	-448
Vegetables, raw, unenumerated value	£37,903	£61,465	+£23,562

Surely, these items justify the above remarks respecting consumption; and we may now briefly allude to our

EXPORTS.

The figures for the last month in 1895 are £19,179,538; for the same month last year they are £20,291,206, showing an increase of £1,111,668; the only decrease particularly noted being £65,779 in metals and articles manufactured therefrom, except machinery. The chief gain is under the heading "miscellaneous manufactures"—the largest item out of the total of £431,000 is placed to the credit of cycles—the export value of which has increased by £139,000. Railway equipments show an increase of about £75,000 for the month. Steam engines went up by about £90,000. Mining and other machinery sent to South Africa and Australia show an increase of value, put at about £109,000. The East takes our cottons to the extent of £400,000 more than reported in December, 1895. American purchases in woollen goods, &c., show a decidedly upward tendency. The year's summary must be deferred for the nonce.

CHESTER PAXTON SOCIETY.—The opening lecture of the above society's syllabus was given by Mr. G. P. MILN, the hon. secretary, in the Museum, on Saturday evening last, the subject being "From Chester to Paris, *via* the Channel Islands, Normandy, and Brittany," with special reference to their horticultural resources. Mr. MILN's treatment of the various incidents *en route*, and the methods of culture adopted, was most interesting and instructive, and the beautiful pictures taken by the way, and illustrated with the limelight, added much to a pleasant evening. Advantage was taken at this meeting of presenting to Mr. J. D. SIDDAI (the founder of the Society in Chester) with his photograph, subscribed for by the members as an expression of their thanks for the invaluable services which he has all along rendered to the Society.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.—The fifty-eighth annual general meeting of the members of this Institution was held on Thursday, January 14th, at "Simpson's," Strand, London. The principal business before the meeting consisted in the reception of the committee's report, and the accounts of the Institution for the present year, the election of officers for the ensuing year, and the election of twenty candidates to become pensioners on the funds. The report, balance-sheet, and the several resolutions were carried unanimously. Incidental mention was made that eighteen pensioners had died during the year, three of the widows continuing to receive the benefits of the Institution. The number of pensioners now on the list, 171, is larger than on any former occasion. A gratuity of £5 was allotted to each unsuccessful candidate; and comment was made on the excellent results obtained from the establishment of country branches at Exeter, Worcester, and other centres.

Allusion was also made to the great loss that the Society has incurred in the death of Mr. JAMES WEBBER. The committee reported that, "In consequence of Richard Brimblecombe of Exeter, aged 67, annual subscriber of £1 1s. for sixteen years; Henry Downing of Hitchin, aged 61, annual subscriber of £1 1s., also life member for twenty years; Thomas Easley, of Birmingham, aged 58, totally disabled, a life member for sixteen years, also contributed £7 8s.; Alfred George, of Puddleigh-Salters, aged 69, annual subscriber of £1 1s. for sixteen years; Oliver Goldsmith, of Bookham, aged 63, annual subscriber of £1 1s. for twenty years; George James, of Binstead, Ryde, aged 67, annual subscriber of £1 1s. for twenty-eight years, also contributed £7 9s.; Richard Newman of Putney, aged 63, annual subscriber of £1 1s. for sixteen years; Thomas Pyper, of West Kensington, aged 78, annual subscriber of £1 1s., also life member for twenty-one years; Robert Squibbs, of Sleaford, aged 72, annual subscriber of £1 1s. for thirty-seven years; and Elizabeth Woods, of Clapham, aged 63, widow of the late S. A. Woods, annual subscriber of £1 1s. for nineteen years—being in distress, and having in every way complied with the regulations, these ten applicants be placed on the Pension List without the trouble or expense of election, in accordance with Rule III. s. 5. The above candidates having been elected unanimously, a ballot took place for the remaining ten with the result given below. There were four candidates who applied for the fifth time, six for the fourth time, nine for the third time, eleven for the second time and nine for the first time; in all thirty-nine applications. The following are the names of the successful candidates, and the number of votes recorded for each:—

JOSEPH MONK	3957
CHARLES SMITH	3762
WILLIAM MILNE	3651
EDMUND PAPWORTH	3385
DAVID DAVIS	3367
GEORGE ASHBY	3255
WILLIAM LEE	3190
ELIZA WEBB	3107
THOMAS SIMMS	2931
RACHEL JEFFERSON	2802

The Annual Friendly Supper is being held as these pages are in the press, under the presidency of Mr. H. E. MILNER.

NEW PUBLICATIONS.—*Botanical Microtechnique*, by Dr. ZIMMERMANN. Translated from the German by JAMES ELIAS HEMPHREY, S.D. (Westminster: ARCHIBALD CONSTABLE & Co.) Laboratory students will welcome this, the latest treatise, on the chemical methods now employed by botanists to differentiate the several tissues and their contents, and render them more apparent. The various staining-methods now employed are described as innumerable. Their importance may be estimated from the remarkable changes made evident by them in the growing nucleus, changes to which we are looking forward for the resolution of many of the problems connected with reproduction, atavism, and the production of sports generally. A chapter at the end is devoted to the methods of study of the nature and work of Bacteria. Some tables, and a good index, complete a work which should find a place in every laboratory.—*The Fourth Report of the Department of Agriculture, New Zealand*, is mainly taken up with agricultural matters; but Mr. T. W. KIRK, the biologist, contributes some concise but excellent papers on the diseases of plants.—*Agenda Horticole*, par L. HENRY, 167, Boulevard St. Germain, Paris. An excellent little handbook of reference for practical gardeners, whether novices or experts, provided they are acquainted with the French language.—*Favourite Flowers of Garden and Greenhouse*, by E. STEE and W. WATSON (F. WARNE & Co.)—*Le Chrysanthème*, No. 4, Lyon, H. BOUVIER.—*Revue Générale des Sciences Pures et Appliquées*, 7th year, No. 23, Dec. 15, 1896, consacrée à la Tunisie, by MM. MAXIME CORNU and others.—*Bibliography of the more important Contributions to American Economic Entomology*, by SAMUEL HENSHAW, U. S. Department of Agriculture, Division of Entomology. Part V., L. to Z., and

Index.—*Vinton's Agricultural Almanack* (for 1897). A year-book for farmers and landowners. *Agricultural Gazette Office* (VINTON & CO., Ludgate Circus, E.C.).—*Fourth Report of the (New Zealand) Department of Agriculture*, Wellington, N.Z.—*Dictionnaire Pratique d'Horticulture et de Jardinage*, 56th livraison. The authors of this book have got as far as the letters Puc. in their valuable work.—*Catalogue des Graines et Plantes Vivantes offertes pendant l'Expos. 1896-1897*. Jardin des Plantes, Paris. Applications for seeds or plants mentioned in this catalogue should be made before Jan. 15, to M. le Directeur du Muséum, 57, Rue Cuvier, Paris.—List of seeds collected in the garden at La Mortola, Ventimiglia, Italy (for private circulation only).—*Liste des Graines Recueillies par le Jardin Alpin d'Acclimatation*, H. CORREYON, 2, Rue Daubert, Geneva.—*A Dictionary of Birds*, by ALFRED NEWTON and HANS GADOW. This is the fourth and last part of this treatise, including from Sheathbill to Zygodactyli, together with Index and Introduction. (London: ADAM & CHARLES BLACK.)—*Atlas des Plantes de Jardins et d'Appartements*, par D. BOIS (KILNICKSKEE, Paris).—*Popular Bulb Culture*, W. D. DREY (UCFOTT GILL, 170, Strand).—*The Rosarian's Year-book*, 1897 (BEMROSE & SONS).—*Catalogue of African Plants*, collected by Dr. FRIEDRICH WELWITSCH, Part I. by W. P. HIEHN (British Museum, Natural History, Cromwell Road, S.W.).—*Annuaire Général Horticole* (Paris: 167, Boulevard St. Germain).—*Hedwig's Monatshefte für Blumen und Garten Freunde* (OPPENHEIM, Berlin).

HYBRID CINERARIAS.

In consequence of the the discussion in *Nature*, some time ago, on the origin of the garden Cineraria, I was led to make a number of crosses among allied plants. The first set of six made between *Senecio multiflorus* (female) and pollen taken from colour-forms of the garden Cineraria, is now in bloom, and for various reasons is deserving of record. The plants are exceedingly handsome, and there is a strong predominance of the male parents in the colour and size of the flower-heads. The colours of the garden Cineraria have been transmitted almost unimpaired: the white centres are perfectly pure and not in the least confused by the rose-lilac of the mother; while the deep blue-purple and maroons are still bright and similar, though toned down to some extent. One male parent was a magenta with white ring around the centre, and this ring in the offspring has disappeared entirely; but in the case of a lavender-tipped father the progeny are also white, with lavender tips. So strong has the influence of the pollen-parent been on colour and size, that the influence of the female requires to be sought for. A curious feature appears in many of the plants for which it is not easy to account; but I think from its character, and from its occurrence in 40 per cent. of the plants in flower, that it must be congenital. It consists in a spot or spots on several or all of the ray-florets, white in the case of pale flowers, and in the case of dark flowers formed by paler areas of the same colour. It is of no horticultural consequence—for the present, at any rate; but one cannot help thinking that it shows a possible process in evolution. If it may be regarded in this way, we have here an original variation, produced by the crossing of distinct species, which, in proportion to its utility in attracting insects, would have a good chance of becoming fixed and intensified. It might be due in some way to the high development of the garden Cineraria, but nothing happens, in any case, for which there is not an original endowment in Nature. It may be noted that these spots occur in the first plant to flower of the reverse cross, in this case white on a maroon ground. The inflorescence departs somewhat in habit from that of the garden Cineraria, and from the point of view of an artist is much improved; being looser and more elegant. In some plants of one of the crosses, however, the inflorescence of the garden Cineraria is very nearly reproduced, but these are in small pots, and dwarfed in consequence.

Apart from the unexpected degree of dominance of the male parent, in the colour and character of the flower-heads, the plants are all very nearly intermediate, and there is no remarkable variation between them. In height, the progeny tends rather to favour *S. multiflorus*. The auricles at the base of leaf-stalks are very nearly in shape like those of the garden Cineraria, especially at the base of the plant, but the degree of dentation appears to be less. The reduced lateral leaflets of *S. multiflorus* have almost entirely disappeared, but about 32 per cent. of the plants show definite indications of them. In the shape of the leaf-blade and in the hairiness of the under-surface, appearances are as nearly intermediate as possible. The involucre vary in hairiness considerably, but there is a general agreement in plants of the same cross; and, as the garden Cineraria varies considerably, I take it that the degree of hairiness has been governed by the male parent. This dominance probably belongs to the garden Cineraria as such, and not to sex, because a plant of the reverse cross, of which I am not now treating, is coming out with flower-heads of clear white in the centre, with deep maroon band, and not at all affected by *S. multiflorus*. Burbidge draws attention to this dominance of one species over another, whichever way the cross is made, in his *Preparation and Improvement of Plants*, p. 122, but I do not find that it is recognised by Bailey in his *Plant-Breeding*, and notes of the occurrence appear to be few. Professor Henslow in his paper on Hybrid Rhododendrons in the *Journal of the Royal Horticultural Society*, vol. xiii., p. 249, referring to the assertion often made that a hybrid resembles the male parent in the flowers, and the female parent in foliage, says, "It would be more correct to say that the offspring may resemble either parent in either way and in various degrees, according to some unexplainable propensities in them respectively;" and, further on, writing on the forms of the corolla of the hybrid or cross in Rhododendron, gives an instance of this propensities. "Thus the small-flowered *R. multicolor* and its variety, Curtisii, invariably brings down the size of the corolla of the larger-flowered species with which it may be crossed, whether it is used as the male or female parent, to some approximation to its own in the offspring." Mr. Burbidge kindly gives me the instance of *Nepenthes Rafflesiana*, which always seems to be prepotent, either as male or as female. As he suggests, instances are no doubt numerous.

I have now to explain the *modus operandi* of making these crosses: The heads of *Senecio multiflorus* were covered at an early stage, in small groups, with muslin, in order to exclude insects. When the organs were in proper condition the pollen of the best forms of the garden Cineraria was brought, each to the heads of the intended bag, and a label applied accordingly. No further precaution, judging by results, appears to have been necessary. If anything had gone wrong, it must have been that pure *S. multiflorus* would have come from the seed sowed; but in no case has this happened, and therefore it may be assumed that *S. multiflorus* is sterile to its own pollen—at least, to a considerable extent. The heads are protandrous, and a good state of the pistil must arrive before the pollen can be applied. The progeny of each cross repeats the colour of the pollen-parent so nearly as to confirm the label in nearly every case.

These hybrids have, of course, no immediate bearing on the origin of the garden Cineraria, and it remains to be seen whether it can be touched by others yet to flower. I feel sure, however, that no investigation can be complete without the evidence of *S. Tusitlaginis*. Unfortunately it is not in cultivation, and I should be extremely grateful to any reader of the *Gardeners' Chronicle* in the Canaries who would be so kind as to send me seed. It is especially desirable also to receive a fresh wild stock of *S. cruenta*, because I think we have not now the best possible form. It appears to me that some of the wild relations of the garden Cineraria are not too perfectly represented by books

and specimens, and I should therefore receive very gladly any seeds from allied plants of herbaceous habit. It would be of interest to possess more complete information on the relative distribution of the kinds, and of the areas they occupy. If any two grow within reach of the same individual insects, it appears inevitable that they must cross, and the facility with which crossing takes place is proved by the fact that not one of the thirteen crosses I have attempted has failed to produce a hybrid. *R. Irwin Lynch, Botanic Gardens, Cambridge.*

PLANT NOTES.

CHRYSANTHEMUM NIPPONICUM.

This Japanese species was described in 1872 by Franchet from specimens collected in Nippon by Savatier, where it is wild, and is also cultivated for the sake of its large, handsome flowers. It is a perennial shrub, about 2 feet high, with numerous stout branches clothed with fleshy oblong-spatulate, toothed leaves, and bearing numerous erect stalked flower-heads, the latter 3 inches across, the disc large, turbinate, yellow; the ray-florets broad, overlapping, and pure white. It is allied to *C. arcticum*, and our native *C. leucanthemum*, the Ox-eye Daisy. There are examples of it at Kew, obtained from Messrs. Dammann & Co., Naples, and from the Yokohama Nursery Co., in whose catalogue it is offered under the name of *Leucanthemum nipponicum*. It is quite hardy, but the stems are killed down by frost. The flower-buds set freely, and there was a good promise of flowers this year, but the first snap of frost destroyed them.

According to an account published in *Müller's Deutsche Garten Zeitung* by Georg Marquardt, Zossen, this plant is a useful winter-flowering shrub for the greenhouse. He recommends that the cuttings should be put in during April, in a close frame, where they root in about a month. They should then be grown on in pots under the same treatment as the common *Chrysanthemum*, or planted out in a sunny border, to be lifted and potted in autumn. In a cool house the flowers expand in December and January, when they are of the greatest value both for the conservatory and for the supply of cut flowers. *H. W.*

HEYWOOD.

THIS, the residence of Lord Justice Lopes, is beautifully situated near the range of Wiltshire Hills at Westbury, and stands in its own park of some 100 acres or more. Its extent cannot be accurately estimated by sight from its undulating character, and the interception of the many large, spreading and handsome trees that abound. Among these are many Elms of enormous size, which tower up to great heights. Oaks, though not so numerous, are nevertheless of large dimensions, one specimen standing near the house has tempted the timber merchant to proffer a large sum for it, but without avail. Lord Justice Lopes setting too high a value on its presence as a landscape object to part with it for its mere commercial value. There are many other trees of interest in the park, notably some Horse-Chesnuts, one having a spread of branches 85 feet, and being otherwise well proportioned; also *Sequoias* (Wellingtonias) and Thorns.

The house is approached through two entrance lodges, the one occupied by the gardener (Mr. W. Robinson) having a foreground of tall trees, a pleasant aspect and comfortable appearance. The house standing as it is does on high ground, commands extensive and very pleasant views of the Westbury Hills and surrounding country.

The pleasure-grounds, which are 7 acres in extent, are well furnished with shrubs and ornamental trees, the belts of Laurel are kept neatly trimmed, and thoroughly under control. Of the evergreen trees there are some nice specimens of *Abies Nordmanniana*, *Thuopsis dolabrata*, *Cupressus Nootkatensis*, *Sequoia gigantea*,

Cryptomeria elegans, *Abies Pinsapo*, *A. cephalonica*, *Pinus austriaca*, *Cupressus Lawsoniana*, and a fine old specimen of *Weymouth Pine*. There are also some large copper Beeches, but undoubtedly the feature among deciduous trees is the very fine *Catalpa*, which stands on the steeply-sloping lawn between the house and lake. This is probably one of the finest in existence. It has a diameter in branch of 60 ft., and its limbs, which are proportionate to its great breadth, rise directly from the ground-line, and are supported by strong iron bands and chains, as well as heavy forked timbers for carrying the horizontal branches. Its age must extend considerably over a hundred years. It has, I believe, a history extending through three generations of the Judge's family, and its increasing

vastage of a substantial glass coping, and this, with the natural shelter furnished by the lofty walls, and a belt of trees to break the north and east winds is sufficient, without movable front blinds. The crops of Peaches every year are splendid, both in point of size, numbers, and colour, and reflect much credit on Mr. Robinson, who personally undertakes the work of pruning and nailing. Many of the trees, too, have been planted by him, as well as numbers of Apples and Pears. The varieties of Peaches grown comprise such excellent ones as *Sea Eagle*, *Bellegarde*, *Violette Hative*, *Dymond*, *Goshawk*, *Coador*, *Wallorton's Admirable*, and *Princess of Wales*; and of Apricots there are the well-known *Moer Park*, *Breda*, *Hemas-Kirk*, *Royal*, *St. Ambroise*, *Shipley's*, and *Kaisha*.

annual crop from six trees number 500 fruits, the varieties being *Stirling Castle*, *Sea Eagle*, and *Bellegarde Peaches*; *Lord Napier*, *Pittmaston Orange*, and *Humboldt Nectarines*. *Brown Turkey Figs* occupy a portion of the back wall, and furnish some fine fruit during August and September. *Melons*, *Cucumbers*, and *Tomatos* are grown in other houses, and at the time of my visit there was ripening a heavy crop of some fifty medium-sized *Melons* in one small house. About 550 *Strawberries* in pots are grown in about four sorts, and it is doubtful if there are many better samples of *Angusta Nivea* sent to London during the season than those from Heywood. Many of the berries weigh from 1½ to 2½ oz. each, and there are practically none less than an ounce of this variety.



FIG. 11.—CHRYSANTHEMUMS DURING THE SUMMER MONTH: AT HEYWOOD. (SEE P. 45.)

age and size have a due appreciation from its present owner. It flowers profusely each year, and appears to be as healthy as it could have been at any period of its life. It has been an object of interest to the landscape photographer on more than one occasion.

The kitchen-garden, which comprises about 3 acres, closely adjoins the house and pleasure-grounds, is well stocked with espalier, bush, and pyramidal trees of Apples and Pears, while bush-fruits and Strawberries are grown in proportion to the demand. Plums, Cherries, and cordon Pears occupy wall space on east, west, and north aspects, the south being devoted to the culture of Apricots and Peaches, which are well grown at Heywood. For Peaches, there is a 50 yards run of wall, and the same amount of space is devoted to Apricots. Standard and dwarf-trained trees are arranged that every useful inch of space is occupied. Both crops have the ad-

Only the best kinds of Apples and Pears are planted, and these produce fruit of good size and quality.

A handsome range of forcing-houses, 48 yards in length, was built a few years since for the growth of early and late Grapes, and early Peaches, another large cool house being devoted to midseason Nectarines, Figs, and Peaches. Grapes are very well grown, particularly *Muscats of Alexandria*, *Madresfield Court*, and *Lady Downes*. *Black Hamburgs* have a house to themselves, with the exception of one rod of *Madresfield*; so, too, have *Muscats*, and these produce fine bunches, brightly coloured, and having large berries. *Lady Downes*, in the late house, were excellent in every respect. Two small divisions are devoted to the earliest Grapes and Peaches; and here, as in all other departments, there is abundant proof that the one in charge is a practical man, and is thoroughly supported by an appreciative employer.

In the cool Peach-house previously mentioned the

Royal Sovereign, too, does well as an early sort in pots.

A varied assortment of decorative and cut-flower plants is grown to meet the demand of the house and conservatory. *Tuberous Begonias*, zonal and other *Pelargoniums*, *Bouvardias*, double *Primulas*, *Poinsettias*, *Azaleas*, *Allamandas*, *Stephanotis*, *Celsias*, *Anthuriums*, *Tea Roses*, *Cologyne*, are some, among others, well grown; *Palms*, *Crotons*, *Dracenas*, *Eulalias*, *Pandanuses*, are a few among the various ornamental foliage plants. A house is devoted entirely to Ferns in pots, and these make a dense mass of fronds during the summer and autumn, completely hiding their pots and the stages on which they stand. The conservatory yields *Camellia* blooms in abundance in their season, as well as *Orange blossom* and fruit in quantity; and the side-stages accommodate a portion of the *Chrysanthemums* in winter, for which Heywood has a local fame. The

owner takes a great interest in these, and his collection is kept quite up to date in point of variety. About 450 plants are grown, principally for large blooms, and sixteen last prizes have been won at exhibitions during the past season. Our illustration on p. 47 affords a good idea of the vigour with which the plants grow.

There is no flower-garden proper at Heywood, but the borders in the kitchen-garden provide a wealth of useful flowers for cutting. On the sides of the small garden-pond, which occupies a central position, summer flowers are grown, and two very large specimens of the pigmy Spruce, *Picea excelsa* var. *pygmaea*, are quite at home, and have occupied the borders for many years—so many that no record is known. They are very fine specimens. *W. S.*

NOTES ON THE SEASON OF 1896, ISLEWORTH, MIDDLESEX.

The first two months were temperate, and the period March to July (inclusive) above the average in temperature. The whole of these seven months were very dry, with the exception of a seasonable rainfall in March. The last five months were cold and wet. The average maxima for the whole year amounted to 57°; the extreme maxima 93°, and the extreme minima 21°. The rainfall measured 21.44 inches. The night temperatures during the summer were generally low, and the extreme monthly minima in no case exceeded 44°.

A temperature of 70° was reached on seventy-seven days, and frost occurred on fifty-seven nights. There was no severe cold during the year, and snow was only visible on two days.

The period of drought that began with the advent of April, and lasted into August, proved very destructive on these dry soils; and the torrential rains of September ruined quite one half of the fruit that had escaped the vicissitudes of the spring and summer.

Vegetables.—A great deal of disease was apparent on the main crop and late varieties of Potatoes, which made a stunted growth in the first instance, and a secondary growth in August and September. The earlier varieties were free from disease, and produced a heavy crop of undersized tubers.

Pears were very difficult to deal with on account of the intense drought, and misdirected efforts have resulted in a great increase in the sparrow plague recently. Lettuces "bolted" early, and the intense heat of the surface-soil prevented the summer sown seed from germinating in time to procure a winter crop.

Fruit.—Pears and Apples bore generally heavy crops (especially the early Apples). Flavour of course varies from year to year. This year Cox's Orange Pippin was far superior to Ribston Pippin. Among the Pears, the old Bourré Bosc was again triumphant over all others. Marie Louise suffered from some difficulty in seed production. I fail to find any really matured seeds, and a large crop rotted off wholesale from premature decay of the pips. The few fruits that were pips remained sweet and sound many weeks after the others had perished.

The wall Apricots bore fine crops, and the Strawberry crop was large in quantity, but the fruits were small in size and inferior in flavour. My one Quince tree was overweighed with an immense crop. Against this the Gooseberries, Standard Plums, Cherries (dessert), and Brambles (of sorts), were absolute failures owing to the drought. Currants had a heavy crop, but were badly blighted. Wall Peaches (outside), carried a fair crop of rather undersized fruit, but fully one half was ruined by five consecutive days of incessant rain early in September, just when the bulk of the fruit was ripe. Filbert and Cob-nuts a small crop. Walnuts fair crop.

Flower Garden.—This proved a year of disappointment mingled with some surprises. Thrips and earwigs were a plague until the September rains came. I noticed also a fly which laid eggs in the blossoms of the Begonias, and the small maggot which hatched, caused the blooms to fall early. The so-called rusty Begonia disease is, I think, caused by the intensity of our mid-summer sun, combined with an arid air and

too high day temperatures. It never seems to affect late-flowering Begonias, or those grown in moderately shady positions out-of-doors. Early in the year the April drought afflicted the border Narcissus, and later on the Roses and Japanese Lilies proved very unsatisfactory, with the exception of those which flowered very late in the season. Zinnias were a complete failure, with the exception of *Z. Haageana*, which stood the drought well. Sweet Peas and annuals generally failed altogether, except the favoured few that received exceptional attention in watering. On the other hand many Cape plants revelled in the hot soil and burning suns of May, June, and July, and bloomed in profusion.

The great bulbs of *Bruusvigia Josephina*, always uncertain of blooming in this country, all, with few exceptions, threw up their sturdy flower-scapes. Those in the open took a far more brilliant colouring than those under glass, and not only lasted long in flower, but withstood the rains and winds of September without damage. *B. Cooperi* also took a very brilliant colouring outside, and flowered freely. *Lycoreis squamigera* both wintered and flowered finely outside against an unheated wall, without any protection.

Gladiolus Lemoni flourished admirably, but some of the species refused to make any growth until September.

Seedling Dahlias (naturally later in being planted than old plants) did very well, but those planted out early failed.

Oncidium incurvum flowered very finely in the open all July and August, and stood the weather without any injury to the blossoms or bulbs.

Evergreen Conifers suffered much in the period May to August, especially Wellingtonias, Arancarias, and Lawson Cypress; but Cedars (including the malignant *C. Deodara*) were unharmed. The French Flint-glass Bottle Company's system of fruit-pressing has proved very satisfactory for Apricots, Morello Cherries, and some kinds of Plums; also for syrups. There is no real difficulty in the process. *A. Horsley, Mandeville House, Isleworth.*

CYPRIPEDIUMS IN BRUSSELS.

Our illustration (fig. 12, p. 49) shows a view in one of the *Cypripedium*-houses in St. Lucien Linden's newly-established nursery at Montrebeck, Brussels, recently alluded to in our columns. More than 5000 flowers of *C. insignis* and its varieties were open at the same time, which produced an astonishing display. Specimens illustrative of fifteen varieties were to have been exhibited at the Royal Horticultural Society's meeting on Tuesday last, but were delayed in transit, probably in consequence of the fog.

HOME CORRESPONDENCE.

PEARS OF GOOD AND BAD QUALITY.—Every season the merits of some particular Pear are brought before the readers of the gardening papers, some of which are due to climate, some to soil, or the nature of the season. This shows it will not do to depend on a very limited number of varieties, as some gardeners are inclined to do. To the market-grower this may not matter, as he cultivates those which he thinks will bring in the best return, regardless often of quality; but with the private gardener it is far otherwise—he must supply dessert and kitchen fruit of good quality for eight months in succession, and the more varieties the better are his chances of obtaining satisfactory crops. In recent issues of the *Gardeners' Chronicle* favourable mention was made of Huxley's Victoria Pear, a variety of which I have a tree trained on an east wall, where it is perfectly worthless, the soil being too retentive, and therefore too cold for it. It never fails certainly to produce a crop of fruit, but the quality is very poor. It is a Pear that is not suited for a cold, clayey soil in Yorkshire. [Have you tried it upon the Quince stock? Ed.] Glou Moreau in the same soil, but on a west wall, brings fruit of fair quality most years; this year, however, it failed to fruit. That favourite old variety, *Conseller de la Cour*, which is here a sure cropper, and of excellent quality, although it

ripens too close on the heels of Marie Louise. This variety is so seldom mentioned by writers, that I am led to believe the favour in the south is not so good as here. I should be interested if some of your readers would relate their experiences with it. I was glad to see that your contributors, on p. 763, for December 19, were so obliging as to give at the foot of their notes the part of the country they reside in. *J. Easter, Nottell Priory Gardens.*

AN EARLY VIOLET.—One of the very earliest to bloom is the Yellow Andwell Gem, old in point of time, but to be grown for years to come by flower-gardeners, on account of its tufted growth, earliness, freedom of bloom, and persistence. It is of a clear sulphur tint, and this useful variety has, by means of sports, originated two other most useful bedding varieties, viz., Goldfinch, yellow, distinctly edged with pale purple, and this in turn sported to Duchess of Fife, having a light primrose ground distinctly edged with blue—a charming variety. It was recently stated by a leading authority on Violas, that there are three epoch-making types among them, one, and the earliest, is *Magpie*, which the late Mr. John Fleming used in company with such admirable effect at Cliveden, and which it is believed has never exactly reproduced itself from seed; *Duchess of Fife*, which is well denominated a leading flower, for it finds admirers on every hand; and *Iona*, the leading *Viola* in 1894, a combination of lavender-and-blue back, with a white blotch on each of the lower petals—a most distinct and striking flower of marked individuality of colour. *R. D.*

POLYGONUM BALDSQUANICUM.—I have read with pleasure the remarks concerning this alone plant, without doubt the most delightful species of the genus. The plant may be fairly described as a climber, or at least a twiner, which, from a garden point of view, gives it additional value and interest, for the growths readily twine round any other body which may be near it, and in this way a number of growths of from 12 to 18 feet in the season is made. During the past season a very fine example of it was for a long time quite a feature, flowering in the herbaceous department at Kew in one of the beds opposite to the small alpine-house. I was at the time much struck by its beauty, and its value as a most climbing plant. The example at Kew very much resembled that figured in the *Gardeners' Chronicle* at p. 17, but it is scarcely possible adequately to describe the beauty of the plant. If memory serves me aright, a few twiggy sticks of some 8 feet high had been provided for it, to the summit of which it quickly attained, then, for want of any further upward support, the growths had toppled over all around in a neglected fashion, forming a beautiful heap, the stems for several feet being wreathed with its paucities of white blossoms, faintly tinted with rosy-pink. It is just the plant for placing at the base of a specimen of *Wellingtonia*, for this, with its branches left as long as possible on either side, would afford just the support it requires. In an ornate site it is equally charming, for its pretty hastate and rather glossy leaves display its pleasing panicles in a most effective manner. *E. Jenkins.*

QUEEN'S DIAMOND JUBILEE.—Whatever may be the fate of the proposed Horticultural Institute—and it would not appear to be a very long one—looking at the practical outcome of the horticultural hall scheme started under such influential auspices a few years since, there is one way, within the reach of the humblest amongst the horticultural community, of worthily commemorating the Diamond Jubilee. Here it is: Let the gardeners of the United Kingdom combine to raise, for this year at least, the quarterly grant to the poor little ones at present enjoying the benefits attached to the Gardeners' Orphan Fund. The gardeners did a noble thing in instituting this excellent charity in 1871; and their uplift of the goal work in 1897, and it can be done with very little self-denial, if every gardener in the country will embrace the opportunity for doing good that such a memorable occasion suggests. To those knowing anything of the children on the fund, it is common knowledge that the 5s. per week allowed to the particular child has (in many cases) to do away, owing to the distressed circumstances of the widow, amongst the other members of her often far too numerous flock. The 5s. should be confined to the child elected—it is little enough, in all conscience; and stern poverty steps in and decreases that in spite of any rules which committees may make, they must often be inevitably disregarded by the higher and more pressing claims of Nature. It is not too late

now for the executive of the Fund to organise a card collection amongst the gardeners of the country, and to have the returns by Celebration Week. Will it take the hint here thrown out in a kindly and good-meaning spirit? Necessarily, the majority of the rejoicings, &c., incidental to the Commemoration of the Diamond Jubilee will be practically confined to adults; in this particular case gardeners will have a grand opportunity of making a noble exception. May they at once embrace it. *J. B.*

HOME OF HORTICULTURE.—The letter from Mr. Douglas in your issue of January 2 deserves a reply, emanating, as it does, from one of our best-known and most respected horticulturists. Mr. Douglas dwells upon the unsuccessful efforts which have been made in the past to establish a home for horticulture. They all prove that horticulture single-handed is unequal to providing a suitable home for itself; and

shows, such as the National Chrysanthemum show and similar exhibitions, can be conveniently held? To relieve Mr. Douglas from undue anxiety, I hasten to assure him that we do not "ignore the lessons to be learnt from previous failures," but hope to profit by them. These failures prove that a combination of all the other sciences with horticulture is impracticable; also that horticulture alone is not strong enough to provide its own home; hence the only alternative is to unite such as will live happily together (under the auspices of the Royal Horticultural Society) and prove an attractive combination. Our continental neighbours—so far in advance of us in this matter, to our disgrace, be it said—have proved that horticulture and the fine arts may be associated to their mutual advantage. No one knows better than Mr. Douglas the necessity for providing different houses for different classes of plants. Horticulture requires suitable surroundings, and will not

upon second thought, Mr. Douglas may not see very much to laugh at, either in the state of the benevolent funds or in any effort to augment them. *James L. Wood.*

THE LATE MR. JAMES WEBBER.—No doubt to many gardeners or general readers of the *Gardeners' Chronicle*, Mr. James Webber, whose lamented death you last week recorded, was a very successful salesman of garden produce, and no more. To many others, however, he was well known for his active work in connection with gardening charities. To too few probably was he known as a very earnest and unselfish reformer of our market habits and customs, especially in relation to fruit. With the exception of Mr. George Monro, who was a very sympathetic co-operator with Mr. Webber, no other Covent Garden salesman ever attempted to do so much to promote reform in fruit-packing for market sale as he did.



FIG. 12.—CYCLOPEDIUM-HOUSE IN M. L. LINDEN'S NURSERY, MOOITREBECK, BRUSSELS. (SEE P. 48)

that a combination of all the other sciences with horticulture spells failure. I venture to say that such a result might have been foreseen as inevitable; for such projects, despite the pomp and ceremony which attended their inauguration, and the "great flourish of trumpets," which Mr. Douglas particularises. He, however, adds, that this usually accompanies unsuccessful horticultural schemes; and here I would remark that a very great flourish of trumpets will be required to herald Mr. Douglas's Temple of Horticulture (formed after the similitude of the "Drill Hall of the London Scottish Volunteers in James Street, Westminster," "a building on a modest scale, not for large flower shows"), when he lets us see his plans, because such a scheme would be predestined to failure, and therefore should have a great flourish of trumpets, like its unhappy predecessors. A building for large shows is precisely what is now so urgently demanded, and nothing short of this will meet the requirements of all interests. This was most forcibly stated by Sir Trevor Lawrence, Bart., and also by J. A. Bevan, Esq., at the Jubilee Chrysanthemum banquet. Perhaps Mr. Douglas will suggest where the large

thrives amidst the glamour of a music-hall, nor in the company of shooting-galleries and Punch-and-Judy shows. This may serve in some measure as a reply to his remarks as to the Aquarium. The ill-fortune that has attended the Alexandra Palace is proverbial, and it is therefore weak to mention that place in this connection. I have brought forward a scheme based upon the experience of our neighbours, and have suggested that the fine arts might be profitably associated with horticulture. My opinion remains unchanged, and I await the publication of some better projects from those who have so freely commented upon my own. Mr. Douglas' flight of fancy into the region of exhibitions, where he sees exhibitions of kid gloves, state carriages, matches, &c., is of course very fine; but upon his descent to this sublimity sphere he will perhaps allow that his imagination has played him false in this instance. The only explanation for such a remarkable idea is to be found in the reference which I made to a three days' festival in aid of the benevolent funds; but kid gloves, state carriages, and matches, were in no wise contemplated or even hinted at. Perhaps,

Mr. Webber's efforts were not limited to the giving of good advice. He did for several years alone, and later, in conjunction with Mr. Monro, offer at some of the London exhibitions, but especially in connection with those of the Royal Horticultural Society, valuable money-prizes in furtherance of the object he had in view. Like some of his market colleagues, but in a very practical way, Mr. Webber realised how much loss resulted to home-growers of fruit because of their very defective market methods of packing. It was natural enough that any man of ordinary feeling, and of a sympathetic nature, should realise the grave deficiencies of our home methods as compared with the much better those of the foreigner; our superior home-grown fruit being, by its bad packing, heavily handicapped in the market. Since Mr. Webber's prizes originated in what now seem to be the far off South Kensington days of the Royal Horticultural Society, very great progress has been made, especially in relation to soft fruits, and to an appreciable extent with Apples and Pears; although much yet remains to be done by the rank and file of growers. I always found in connection with the judging of the classes for

which Mr. Webber's prizes were offered, much more interest than related to the judging of ordinary fruit classes. Mr. Webber invariably assisted at the function, and would, in making awards, always give reasons for so doing. He was not easy to please, because he had good ideals, and wished to see them realised practically. The earlier classes were instituted prior to the introduction of that wonderfully popular and excellent packing ingredient, wood-wool, and cotton-wool was the chief element employed. That material really gave to the judges satisfaction. Mr. Coleman, of Eastnor, was, I think, the first to introduce soft, sweet, clean moss, especially for Peaches, and this material was greatly liked. It was not, however, equal to wood-wool, a material that everyone could have at disposal, whereas moss needed considerable cleaning and preparation. Now wood-wool, which is so cheap, places all on an equality, although even that does not make skill in packing always equal. However, great progress has been made all round. No doubt, it would be a pity were packing classes for all descriptions of fruit entirely withdrawn from exhibition schemes, for the best examples do offer to young growers very useful object-lessons, and invariably they create great interest. We must not forget that, much as things have improved, there is yet great room for further development. Neither should we forget that in this valuable work few men have been such earnest pioneers as was the late James Webber. A. D.

POTATO DISEASES.—On p. 13 of the *Gardeners' Chronicle* for January 2 ("Potato Tercentenary"), Professor Johnson is reported to have stated "that the fungal filaments (the mycelium of the *Phytophthora infestans*) in the tubers, &c." (of the Potato), "do not die, but rest in the tuber during the winter to germinate with the disease but in the following spring, and to spread disease in the newly-formed shoots;" and then he warns us that diseased Potatoes in consequence should not knowingly be used as seed. Has this theory been fully established by our scientific men and experimenters? I ask this question, as for a long time there has been great controversy upon this subject, and it is of the utmost practical importance to us who cultivate the Potato, and Professor Johnson seems to speak so definitely. Professor Plowright, in his lecture before the Royal College of Surgeons, in February, 1891, held this rather different opinion. That it is at least uncertain "how the *Phytophthora* exists from the summer of one year to the summer of the next;" that those sexual organs which were found by Mr. Worthington G. Smith, and thought by him to be the resting-spores of the fungus, have since been much disputed to be as such, and that "if we fall back upon the theory that the fungus hibernates in the tissues of the tuber, it seems at first to afford no satisfactory explanation of the process. It is also stated by eminent mycologists that the action of the mycelium upon the tissues of the Potato plant is essentially destructive, and when the tubers are affected with *Phytophthora* in the autumn months, they almost invariably pass into decay; but if infected tubers are preserved through the winter months, the mycelium dies. Also it is stated that the *Phytophthora infestans* and the wet-rot (*Bacillus amylobacter*) cannot long live together; that the former is generally succeeded by the latter, and if very bad, destroys its mycelium. We know the life-histories of many of our most destructive parasitic fungi, such as rust and mildew, smut and bunt, ergot, &c., of Gramineae, and how in each instance the life cycle is completed, and it would, I am sure, be very interesting to many of your readers if it could be explained how the fungus, whether through the medium, resting-spores, or otherwise, germinate in the spring "to spread disease in the newly-formed shoots," as Professor Johnson says it does. I have often planted diseased Potatoes in the spring, and found no difference whatever in the crop from those grown from healthy tubers; and similar results have often been recorded in the columns of your paper. *Alfred Gault, Shrewsbury.*

BRITISH QUANO.—I know of some soils which require little or no manure, and where the study must be not how much, but how little may be used. A safe method, however, is to have all the ground intended for the different crops trenched or double dug early in the autumn, and this will give the fowl manure a good chance of being well permeated through the soil during the winter. There is more in this early surface dressing than many amateurs are aware of. I stated recently in a small article which you were kind enough to publish, that on my land, which is of a poor light sandy nature, that I top dressed six

square yards every morning, which proved sufficient for a heavy crop of Onions. Now on a good depth of soil of a rich loamy nature less than half this quantity is necessary. I strongly recommend all who have gardens and allotments to pay more attention to my plan of manufacturing and utilising the fowl manure. Some people residing not far from where I am scribbling these lines, are keeping over 200 fowls—all in and in a fit condition, with tons of this valuable article under their perches which has not been cleared out for I dare say, some few years. Now, these very good, simple, and kindly-disposed individuals, will talk to you by the hour about this crop not doing well, and the other crop not paying, hard times, and such-like; and you may as well try to turn the "moon into a green cheese"—an old saying—as to convince them of their great mistake; they will turn you off with, or put you down with, such words as, "to err is human!" Well, I am now trying all in my power with object-lessons to prove to these good folk how they throw their money away foolishly. *Joseph Meredith, Rose Mount, Bishop's Cleeve, Leekeshall, Staffs.*

THE HISTORICAL MULBERRY TREE AT SYON.—Visitors to the gardens at Syon House, Brentford, will note that this old tree, which bears a plate announcing that it was planted by an Earl of Northumberland in 1548, is renewing its youth in a very satisfactory manner. Some years ago a branch broke away from the old trunk while retaining its hold upon the stock; falling upon the ground, it began to put forth roots into the soil below it. Earth was brought and piled up above the rooting-point, and now it has grown into a vigorous tree, thus handing down the old one to posterity in a rejuvenated condition. Every year it becomes an increasing object of interest, and bears testimony to its longevity. It is carefully tended by Mr. Wytches, who has the satisfaction of seeing it flourish beyond his best expectations. *R. D.*

FLORIFEROUS EUCHARIS GRANDIFLORA.—Having read in the *Gardeners' Chronicle* instances of flowers of unusual growth or bloom, I should like to mention the fact that two pots of *Eucharis* are flowering for the fourth time this year. The bulbs are growing in 10-inch pots, and they stand very near to the hot-water pipes in my stove-house. One plant has now sixteen spikes of bloom, and nearly all of them have five or six, and one has a spike of seven blooms, all fully open. *Robert Spilman, Birmingham.*

THE EUCHARIS MITE.—The enclosed *Eucharis* bulb, so badly affected with mite, has been lying in my office window since last June. It has been exposed to a very low temperature, the window having been frosted over several times this winter. I quite believe that there is no cure for it save the one frequently given in the *Gardeners' Chronicle*, viz., the burning of all affected stock. *J. H. W.*

CEDRUS DEODARA.—The woods near to Belvoir Castle are noted for their fine timber trees of various kinds, but *Cedrus Deodara* cannot be counted a success; and even if it had thriven, I very much doubt if the timber would be of any value. *C. atlantica*, on the other hand, grows freely, and soon makes a fine tree, with a good straight bole, in which respect it differs much from the *Cedar of Lebanon*; nevertheless, I incline to the opinion that these two varieties are botanically identical. A fine specimen of *Cedrus atlantica* had to be cut down here after the storm at the beginning of 1894, and particulars of its size, &c., were noted in your columns soon after. The stem of this tree had a girth of 8 feet 6 inches at 3 feet from the surface, a good record for ninety-six years' growth; but I am informed that the timber proved very soft when it was sawn up a short time ago. There are many trees of it here of similar size which are growing in a strong blue clay that is reputed to be 60 feet in depth. These trees are sheltered to a great extent by older specimens of deciduous trees, and the height above sea level is 270 feet. *W. H. Dixon, Belvoir Castle Gardens, Grantham.*

APPLEY TOWERS AND LADY HUTT GRAPES.—Although rather late on this subject, I will give my experience of these varieties, so few gardeners having given theirs. I planted some young Vines at the time these varieties were distributed, including one each of Appley Towers and Lady Hutt. The vine in which these Vines were planted had a very flat heavily-timbered roof, and was rather shaded, more

over the soil was not one of the best for the Vine. In order to obtain as much light as possible, the Vines are trained up the middle of each light, a brick path runs along the front, and prevents an outside border being made. The border inside the viney is divided into bins by brickwork partitions 3 inches thick, built in cement, extending from the front wall to the path, and each division contains two Vines, has a usual sort of drainage overlying a cemented floor, and soil to the depth of 2½ feet. These bins were made, because owing to the narrowness of the border, it needed oft renewing, and as the contents of one bin were renewed each year without disturbing the others, they had their advantages. The other varieties included in the same viney are Black Ham-burgh, one of Madresfield Court, Buckland Sweet-water, and Foster's Seedling. The fruit is ripe by the beginning of August, and that of Lady Hutt is later than any of the others. Appley Towers is in my opinion the better Grape of the two. Both Vines grew vigorously, Appley Towers colours well, but its bunches as yet are not large; the berries resemble those of Madresfield Court, but they are not so large, and are not so pointed as those of Black Alicante. The flavour when the bunches are allowed to remain on the Vines, as these did till November, is, I think, an improvement on Black Alicante; but the skin is not so thick nor so hard as in Lady Dowes' Seedling, than which variety it is an improvement as regards flavour. I am inclined to think it will prove to be a useful Grape, but less attractive as an exhibition variety. The best examples that I have noticed were growing on Vines in the gardens of Keele Hall in 1895, and perhaps Mr. Wallis will kindly give us his opinion of the fruit as grown in the good Grape soil of that place. The fruit of Lady Hutt does not please me, the greenish colour, also mentioned by others, being much against it, yet I have left it for a long time on the Vine well exposed to the light. The flavour, however, is better than might be expected, but it is not equal to Buckland Sweetwater or Foster's Seedling. It shows fruit freer with me than Appley Towers, but this may be owing to fruiting too spurs. It has a nice, round, good-sized berry, which keeps well, although the skin is not very thick. *J. Lanbert, Paris Castle Gardens.*

HUYSH'S VICTORIA PEAR, ETC.—Respecting my remarks upon the above (see p. 11 in the issue for Jan. 2), I should have stated that the trees are growing in the vale of Berkshire, about fifteen miles from Reading, Oxford, and Newbury, either way. *J. C.*

A NEW TOLL AT COVENT GARDEN MARKET.—It is almost like to say a few words on a matter that is of great interest to a number of your readers, viz., the imposition of a new toll at Covent Garden Flower Market on the 1st inst. This new toll is one half-penny per box on all cut blooms, &c., which arrive to be sold on commission, those stand-holders who sell their own goods being exempted from payment of the toll. Now to me this seems strange—why should those who are non-stand-holders be so taxed? Is it not such as we who pay the commission-agents' stand-rent? And, but for us, he would not require such stands. I really think that, considering the hard struggle we small folk have to earn a decent living, his Grace might be content with the market-dues previously paid, an addition of a few hundred pounds per annum being of little account to him, although to us they mean a great loss. It seems hard that at the same time that our local rates should be reduced by the Government to help us, that all we gain by that, and more beside, should go into his Grace's pocket. It seems but a trifle; but, added to what we previously paid, it means a good deal. For instance, last week I sent eighteen boxes of blooms to the market, the duty of which amounted to 2s. 6d., and that of course, there is the carriage and salesman's commission. The tax is the little man's tax; the big grower has his own salesman, and is therefore exempt. *J. Cull.*

SOCIETY.

ROYAL HORTICULTURAL.

JANUARY 12.—The first meeting of the committee for 1897 took place in the Drill Hall, James Street, Westminster, on Tuesday last. In the morning especially the weather was foggy, and there was but little sunlight. Despite these adverse external conditions, however, there was a very satisfactory exhibition; and, owing to several admirable collections of Cyclamens, the display was a bright one.

From the Cambridge Botanic Gardens an exhibit by Mr. LYNCH of flowering-sprays of certain *Senecio* seedlings deserved more than passing remark, for besides being very ornamental in themselves, they were the result of experiments that are alike useful and interesting. Considerable interest attached also to the exhibit of a strain of *Cyclamen* from Brussels, which produced flowers showing much modification from the usual type, and, though the general opinion appeared to be sceptical in regard to their decorative value, they represent a break that is well worth noting. Orchids were numerous, and many meritorious plants were exhibited. There was a display of Chinese Primulas from Swanley, and several large collections of Apples.

Floral Committee.

Present: W. Marshall, Esq., Chairman, and Messrs. C. T. Dewey, H. B. May, E. Herbol, E. Dean, Robt. Owen, Geo. Stevens, Jas. Hudson, J. Jennings, R. H. Lowe, Chas. E. Pearson, J. Frazer, Chas. Jeffries, J. T. Bennett-Poat, Chas. E. Shea, Chas. Blyck, Geo. Paul, H. Selfe-Lennox, Harry Turner, Jno. Fraser, and W. B. Barr.

A magnificent group of *Freesias* was exhibited by N. L. COOK, Esq., English Garden, Essex (gr., Mr. Stuart). There were in five-inch pots, 5 bulbs in a pot, and each was surmounted by a rare lot of beautiful white blossoms, which created an unusually good display (Silver Flora Medal).

CHRYSAETHEMUM, though few in number, were not altogether absent from the meeting. Mr. Hawkes, gr. to the EARL OF JERSEY, exhibited a few blooms of a very singular narrow-petalled, gold-coloured decorative variety named *Chrysanth.*; Mr. R. OWEN, Castle Hill Nurseries, Maidenhead, exhibited three blooms of *Hieracium*, an herbaceous variety in the way of Louis Boehmer, but in the absence of any sunlight, it was difficult to decide the shade of colour. From Mr. C. HERBIS, Drompore, Taplow, were some blooms of the useful, white decorative variety, *Princess Victoria*, which obtained an Award of Merit in 1892.

MESSRS. T. CRISP & SON, Tunbridge Wells, exhibited a few plants of the Violet *Amiral Avelin* and also several flowering specimens of the curious winter-flowering shrub, *Hamelalis arborea*.

MESSRS. W. CROSSLAND & SON, Highgate Nurseries, London, exhibited a group of plants containing *Ericas* such as *E. melanthera*, *E. hycemalis superba*, *E. hycemalis* alba, *Cyclam. n.* and *Aucuba japonica* were uncommonly well fruited. All the plants represented unusually good cultivation (Silver Banksian Medal).

MESSRS. H. CANNELL & SONS, Swanley, Kent, displayed a group of plants in flower of varieties of *CHRYSAETHEMUM*. The plants, which were in four and six-inch pots, were well flowered, and of a dwarf desirable habit. The strain is a capital one, possessing flowers of distinct and pretty colours. Eynford Road, Cannell's Pink (light in shade), Pink Perfection, White Swan, Her Majesty, Cannell's Whites, Eynford Yellow, and Souvenir represented some of the best (Silver Flora Medal).

From the Botanic Gardens, Cambridge, Mr. R. J. LYNCH exhibited flowering specimens of a number of *Senecio* seedlings from a cross between *S. multiflorus* figured in *Gardener's Chronicle*, April 11, 1895, fig. 69, and the garden *C. teraria*. Several of these were very pretty and in habit extremely graceful (Botanical Certificate). For Mr. Lynch's remarks upon see C. sec. p. 46.

SOME SMALL *CYCLAMEN*s were shown by M. DE LANSING, Rue de Constantinople, Brussels. The petals, in tend of being so thickly reflexed as in the ordinary *Cyclamen* flower, were more regular, broad, rounded and spreading, and reflexed only to a horizontal position. Each plant in each of a different degree of modification, and the petals in most cases were fringed. They were shown as varieties of *Cyclamen patiblo*. Brussels Queen, a crimson variety, was the most interesting, being of an uncommonly good colour. *Elzevire* and *Ombifus* were fringed rather more than others, but *Fosse patout* and *Princesse Belge* also presented interesting features. An Award of Merit was accorded to the strain.

Major JONES, Sunningdale Park, Ascot (gr., Mr. Thorne), contributed a group of plants of *Senecio*. The plants were very meritorious in foliage and flower, some of the white varieties especially being large and pure. The flower stems were a little dwarf, owing to rather more heat having been used than necessary, otherwise the culture was excellent (Silver Flora Medal).

A capital collection of *Senecios* was shown by Mr. J. G. M'AY, Gordon Nursery, St. Margaret's, Twickenham, Middlesex. A considerable variation of colour was represented, and the flowers were of a first-class strain. By cultivation the foliage was obtained dwarf and small, and the flowers, though short-stemmed, were well above the leaves; although a very creditable collection Mr. J. M'AY also exhibited fringed flowered varieties, white and pink (Silver Flora Medal).

Mr. J. COOK, Forde Abbey Gardens, Chard, exhibited some nice *Cyclamen* blooms, and two good sprays of flowers in 1 1/2 inch pots of *Euphorbia pulcherrima*.

Orchid Committee.

Present: Harry J. Veitch, Esq., in the Chair, and Messrs. Jas. O'Brien (Hon. Sec.), Dr. B. Crawley, H. Broonian White, H. M. Pollett, H. Ballantine, Fred Hardy, J. Gabriel, G. W. Law-Schofield, W. H. White, W. H. Young, H. J. Chapman, E. Hill, J. Jaques, W. Cobb, J. Douglas, C. Picher, and T. W. Bond.

A very good show of Orchids was made by the various exhibitors, notwithstanding the dark and dull day rendered it necessary that the Hall should be lighted by gas.

BARON DE H. SCHAUER, The Dell, Egham (gr., Mr. H. Ballantine), exhibited in grand form the beautifully blotched *Odontoglossum crispum* var. *Stevensii*, with fifteen very large flowers on a spike, the exhibit securing a Silver Flora Medal. Baron Schauer also sent a small group of Orchids made up of the pretty *Odontoglossum crispum* *Frederici*, a finely spotted variety; a singular pale yellow *O. crispum*; *Cattleya Loddigesii superba*, the largest and best form of the species which has yet been exhibited (Award of Merit); *Cypripedium* x *Leucanum superbum*, a grand plant with over twenty flowers; *Cypripedium insignis* *Andertonianum*, the most beautiful *Cypripedium* x *Madame Cuthbert*; *Calanthe x Seleni*; and the matchless *Calanthe* x Baron Schroder, raised at The Dell.

THE HON. WALTER BORNCHIEFF, Tring Park, Tring (gr., Mr. E. Hill), showed the very distinct and a beautiful *Morandaea haidii* (Rolfe n. sp.) var. *luteum*, a new Peruvian introduction. The type, which is also in Mr. Bornschieff's collection, has glowing purplish-crimson flowers. The var. *luteum* now shown had two fine spikes of bright yellow flowers (Award of Merit); also the remarkable *Bulbophyllum Dayanum*, *Bot. Mag.* t. 6119, which until now has not been seen for some years. The singular texture in the flowers is that the sepals are bordered by a shaggy fringe, and the lip has several raised toothed ridges of a dark rose colour (Botanical Certificate).

F. A. BEVAN, Esq., Tring Park, Barnet (gr., Mr. Lees), was awarded a Silver Flora Medal for a very fine group of *Odontoglossums*, among which noble plants of *O. Pescatorei* were prominent, and in the centre of which was a very large and profusely flowered specimen of *Cypripedium insignis*.

C. L. N. INGRAM, Esq., Elstead House, Godalming (gr., Mr. T. W. Bond), sent *Lidia* x *Lucey Ingram* (*parviflora* ♀, *Perrini* ♂), a very pretty plant with the general features of *L. Perrini*, but the petals enlarged. The showy labellum was introduced in form between the two parents, and exhibited at the Hp of its dark-red purple apricot half the characteristic light lilac mark, often remarked in *L. purpurata* (Award of Merit); *L. x Amena* (*Dayan* ♀, *mexce* ♂) a very singular cross; *L. x Equitum* (*Perrini* x *Dayan*) but which had the petals enlarged; *Lalob-Cattleya* x *Yenus* (*L. C. x Yenus Turner* ♀; *Parviflora* ♂); and *L. C. x Regina* (*C. intermedia* x *L. C. x elegans Turner*) both pretty hybrids.

FRED HARDY, Esq., Tyntesfield, Ashton-on-Mersey (gr., Mr. T. Stafford), showed a peculiar yellow form of *Cypripedium insignis*, with pale green flower stem and yellow and white flower, showing no trace of markings; *C. x Germingium superbum*, which has the features of *Masoreellianum*, *Lidia* x *Andertonianum*, *Dendrobium Cyclo*, *D. x Schneiderianum*, and *Odontoglossum Mirandum*.

MESSRS. J. VEITCH & SONS, Royal Exotic Nursery, King's Road, Chelsea, staged a very effective group, in which were *Cattleya* x *Miranda* (*guttata* *Prinzii* ♀ (*Amethystoglossa*) *Trianae* ♂) with light rose-pink sepals and petals, and labellum in form, and colour much resembling *L. Perrini* and *Cypripedium* x *Pescorei* (*Perrini* ♀, *insigne* *Sauvage* ♂), a collection which appeared for the first time as a well-known hybrid, several fine *Lalob-Cattleya* x *Pallas*, which is not only a fine flower but the inflorescence bears from three to five flowers; *L. C. x Ingrami*, *Cattleya x leucoglossa*, *Epidendrum* x *Andresio-Wallisi* and *E. x elegantulum*; and the pretty *Andresio-Cattleya* *Andresio* and *Andresio*, purple *D. phaneratum*, *Lycaste Skinneri* and *L. S. alba*, *Oncidium varicosum* *Rogerisii*, *O. dichromum*, *Stenoglossum lobata*; and among a large number of remarkable *Cypripediums* were *C. x Euraydes*, *C. x 1 mbe*, *C. x Harrisii* x *superbum*, *C. x Enone* *C. x Niole*, and a number of forms of *C. x Leucanum* (Silver Flora Medal).

The group staged by Messrs. F. SANTEE & Co., of St. Albans, consisted of *Andresio*, *L. S. alba*, and a pretty variety like a small *L. Dawsonii*, named *L. a gemma*; *Dendrobium* x *Dulse Oakwood* var., a pretty soft rose-pink tinted flower; *D. x Cassiope* and *D. Baneroffianum* the last named a neat and profuse flowering ally of *D. speciosum* (Robertson's type); the pretty and elegant *Andresio*; *Andresio*; four plants of the elegant *Phalocanthus* x *Aroidioides*; *Odontoglossum nevium* *excellent*, *O. Harringtonii*, *Lycaste piana rubroglossa*, *L. Skinneri* alba, *Cattleya Chocensis* *virginalis*, *C. Trianae* *illustris*, *Stenobrychnis maculata*, *Phalonia Karli*, *Oncidium pulchellum*, *Cypripedium* x *Hoffmannianum* (*insigne* x *Boxalli*) x *C. x H. x D. Schoum* (*lathraeanum* *aruncum* x *Spicerianum*, *C. x Morrisianum* (*Harrisianum* x *insigne*), *C. x Mrs. E. O. Uillein* (*villum* *aruncum* x *Leucanum giganum*), *C. x Lydinianum* *superbum*, *C. insigne* *Dimmockianum*, and *Lithopsis Stuartian*, *Woodlands* var., a small form but very prettily marked on the lip and lower halves of the lateral sepals.

MESSRS. LINDEN, 11 Horticulture Internationale, Parc Leopold, Brussels, showed *Ochilidion vulkanica maxima*, a grand variety with rich, dark magenta flowers, and for which a Cultural Commendation was awarded; and *Cochlidia* x *minuta* (*Noezlini* x *valenciana*) with indistinguishably vivid floral tints, a new blend of the parents indicated; also *Cypripedium* x *Lebanianum* *Huyndianum* x *philippense*, in which the best features of both the agents used were incorporated, and an improvement on each effected, which cannot be said of many hybrid *Cypripediums* (Award of Merit). Messrs. LINDEN also showed *Cypripedium* *insigne fuscum* and *C. L. Warburtonianum*, both distinct in

their way, and *Odontoglossum crispum muscicum*, a pretty form in which the spots cluster in the middle of the petals.

Dr. B. CRAWSHAY, Esq., Rosefield, Sevenoaks (gr., Mr. S. C. Oke), showed *Lidia* *excellent*, "Mrs. De B. Crawshay," a large well-formed flower of the "grandiflora" class, and the darkest in colour which has yet appeared, the whole flower being of a glowing dark rich-purple, the front of the lip deep crimson.

H. GREENWOOD, Esq., Highfield, Haslingden, Lancashire, showed *Cypripedium* x *Lilian Greenwood*, a very large and showy hybrid of the *C. x Olenus* class, and which may be between *C. bellatulum* and *C. callousum*. The flower was thick in texture, suffused with bright rose, and spotted on the petals with red (Award of Merit).

MESSRS. HUGH LEW & Co., Chelton, were awarded a Silver Banksian Medal for a group in which were the rare *Phalaenopsis* x *intermedia* *Bymeriana*, *Odontoglossum crispum cuspidatum*, and other good *Odontoglossums*; *Angraecum sesquipedale*, *Cattleya Eldorado*, *Cypripedium* x *Madame Georges Trauffat*, *C. x Leucanum apiculatum*, *C. x L. scutellum* *Low's* var., and other fine *Cypripediums*, &c.

JOHN STARK, Esq., Croston Towers, Akeley Edge, Cheshire (gr., Mr. S. Marshall), sent *Cattleya Trianae* "Beruard," a large flower with purple spot on the petals, like those of *C. Beckhousiana*.

Mr. OTTO FROBEL, Zurich, sent a form of *Odontoglossum x Andertonianum*, with very few spots on the segments; and *BRITANNIA* *YOUNG*, Esq., Llandudno, Esq., Llandudno (gr., Mr. Puytz), sent *Lycaste Skinneri*, *Young's* var. (*L. S. americana* of Reichenbach, vol. iii., p. 39), a remarkable apric yellow tinted variety.

Fruit Committee.

Present: Philip Crowley, Esq., in the chair, and Messrs. Geo. Dunlop, Jas. Oswald, G. T. Miles, G. W. Cummins, A. F. Barron, J. Willard, Jas. W. Sutherland, J. Wright, Alex. Dean, Jno. A. Laing, J. W. Bates, Geo. Woodward, W. Farr, C. Herrin, H. Balderson, Chas. Ross, Geo. Wythes, F. Q. Lane, G. H. Sage, G. Reynolds, Robt. Fife, T. Francis Birtles, and Geo. Norman.

There were numerous exhibitors in the competition for flavour in Apples and Pears. The test adjudged apple was again Cox's Orange Pippin, from Mr. J. POWELL, Ilington Gardens, Paddinton. The fruits were obtained from 18-years-old bush trees upon the Paradise stock, grown upon light loam on chalk in Dorset. Two *Rhacoma* Orange Pippin, shown by Mr. Geo. Woodward, go to ROGER LEIGH, Esq., Barham Court, Maidstone. These were obtained from Standard Orchard trees on the Crab stock in stiff loam. The Best Pear was Winter Nellis also from Mr. Woodward, taken from trees in the open on the Quince stock, planted in loam, and No Pine No Pine, shown by Mr. O. THOMAS, Roy-L Gardens, Frognor.

MESSRS. JAS. VEITCH & Co., Royal Exotic Nursery, King's Road, Chelsea, exhibited four of the 1st Apple s; *Fraise d'Hoffinger*, a pretty-coloured fruit, suitable for the kitchen and for exhibition; *Stand Red Beaver*, which has already received an Award of Merit in the Horticultural Exhibition; the last-named was recommended an Award of Merit. It is a large fruit, very like a good-sized Blenheim, and its text is apparently about the same, but the quality is perhaps better. It is useful for dessert, or kitchen use.

Mr. J. COOK exhibited a few highly-coloured good fruits of *Dumslor's* Seedling Apples, and some others.

Mr. Geo. Wythes, gr. to Earl Percy, Syon House, Brentford, exhibited a nice lot of fruits of *Syon Prolific* Tomats (Cultural commendation).

MESSRS. Geo. BUNYARD & Co, The Old Nurseries, Maidstone, exhibited a magnificent collection of Apples in 100 dishes, and twelve dishes of Peas. Both culinary and dessert varieties were represented, and the specimens were of the finest quality (Silver gilt Knightian Medal).

Another display of Apples and Peas, in about eighty dishes, was shown by Messrs. JAS. VEITCH & SONS. The Peas in 100 dishes were *Director*, *Alfred*, *Collins*, *Maria*, *Beaumont*, *Belmont*, *Elvier*, *Veislan*, *Beurre*, *Rouge*, *Bassinier*, *Bergamot*, *Liband*, *Ouvrier*, *des Serres*, *Marotte*, *de Millip*, *des*, *Glou*, *Morcan*, *Lerganot*, *d'Espere*, &c. The Apples were bright, clean specimens of capital quality (Silver gilt Banksi in M.D.).

MESSRS. H. CANNELL & SONS, who exhibited an excellent and representative collection of Peas, were awarded a Silver Banksian Medal. Potatoes were also shown by Messrs. YOUNG & DUNSON, Stevenage Nurseries, Herts. A very prolific small-fruited variety of Tomato, previously certified came from the same firm.

Obituary.

MR. THOMAS DARLING.—Many in the north of Scotland will learn with regret the news of the death, which took place on Sunday evening, 10th inst., at the age of 84, of Mr. Thomas Darling, of the well-known Aberdeen firm of Messrs. Cardno & Darling, Seedsmen and Nurserymen. Mr. Darling was a native of Dalkeith, and came to Aberdeen in 1839, being employed as gardener at Woodhill, then belonging to the Grants of Montmark. There he remained for twelve years. He then entered into partnership with Mr. George Cardno.



THE

Gardeners' Chronicle.

SATURDAY, JANUARY 23, 1897.

THE PLANTS OF WEST AFRICA.*

A QUARTER of a century has now elapsed since Friedrich Welwitsch died. A new generation of botanists, with different aims and methods, has since arisen. In spite of this, to those who were privileged to know him his memory is still green. Nor is this surprising, for his was an unique personality. Stately in manner, prepossessing in appearance, full of knowledge in his own department, he was modest and retiring to a fault. To his friends the manner in which he endured poverty, cruel misrepresentation, and at length bodily suffering, was, though painful, by no means profitless as an example. The book before us contains an excellent portrait of the great botanist-traveller, and a sketch of his career, to which we must refer the reader for the full details. It must suffice here to say that, quitting Austria for Lisbon in 1839, he quickly set to work to explore the country in the vicinity. His botanical labours in Portugal continued until 1853. During the interval Welwitsch had the care at various times of the Botanic Gardens of Coimbra and Lisbon, and acted as garden-superintendent of the Duke of Palmella's gardens at Cintra, Alentejo, and elsewhere. He was one of the founders of the Horticultural Society of Lisbon, which was established in July, 1844. In 1853, Welwitsch started for Angola under the auspices of the Portuguese Government. Establishing himself in the first instance at Loanda, he speedily set to work to collect plants and other objects of natural history. Subsequently, he proceeded to the district of Golungo Alto, some 125 miles from the coast, where he spent two years, suffering greatly from fever, but never abandoning his work, and on one occasion enjoying the society of Livingstone for some weeks. From thence he proceeded to Pungo Andongo, 250 miles in the interior, which he described as a botanical garden in the form of a park.

We cannot follow him in his subsequent wanderings, when he was often prostrated by fever. We can merely add that he subsequently went southward to Benguela and Mossamedes, where he found a mixed flora partaking of the characters of those of the Cape on the one side, and of Senegambia on the other. Further south, near Cape Negro, a desert region exists, and here he found that wonderful plant which bears his name (except, be it said, in this very volume!), and which created so much astonishment and excitement when its

peculiarities were first made known in these columns by Sir Joseph Hooker. Welwitsch's own sensations were "so overwhelming that he could do nothing but kneel down on the burning soil and gaze at it, half in fear lest a touch should prove it to be a figment of the imagination." No such botanical wonder has been since brought to light.

In 1861 Welwitsch returned to Lisbon, taking with him his magnificent collections. We do not think his botanical collections have ever been surpassed in the care bestowed on their preparation, when due weight is attached to the climatal conditions under which they were made. Moreover, almost every specimen has a label attached to it containing numerous details as to the habit, uses, and distribution of the plants.

Finding that it was necessary to visit London for the purpose of naming and arranging his vast collections, he settled in the metropolis, and became entirely absorbed in this occupation. The Portuguese Government, however, ill-informed, as we must believe, of the real facts of the case, became dissatisfied, and ultimately suspended his salary. Welwitsch worked on as before, till his personal resources were well nigh exhausted; hopeless disease supervened, and on October 20, 1872, he was released by death.

To the ordinary reader, the details of Welwitsch's career, and the narrative of his extraordinary travels as given in this book, will appeal strongly. Professed naturalists will require that the labours of this much-tried man of science shall be turned to account. To some extent this has already been done, but in a detached and inconsequent form. Now we have before us the first part of a complete catalogue of the plants collected by Welwitsch. This has been prepared by Mr. W. P. Hiern, than whom no more careful, painstaking, or conscientious editor and compiler could have been found.

Some most interesting notes on the structure, and especially on the uses of plants, are given. We give an extract from one which appears on the very first page, and which from internal evidence is clearly attributable to Mr. Hiern. In other cases, it is not always clear whether it is the traveller's own notes which are copied or paraphrased, or whether the comments are from the pen of the editor.

"The Ranunculaceæ in the flora of Huilla, including the district of Bunabo, are represented by only three species of *Clematis*, and one species of *Ranunculus*, thus by four species altogether; nevertheless, they produce a striking effect upon the physiognomy of the forest landscape by the presence of immense masses of two erect species of *Clematis*, so that large tracts of pasture ground situate amidst the forests, during the flowering season of these plants, look at a distance as if covered with snow; and this effect is enhanced by the white-flowering *Cephalaria centaurioides*, Roem. & Sch. (*Webb. Herb.*, No. 522), which grows in company with them: this happens in the months of February and March, when extensive tracts of land are flooded after the rains, which set in about October.

"On February 8, 1860, during an excursion towards the confuence of the streams Lopollo and Ferao, Welwitsch enjoyed ample opportunity to admire the scarcely imaginable magnificence of these species of *Clematis*; two species, each with whitish-red flowers 2 to 2½ inches in diameter, and with stems 3 to 4 feet high, are erect, whilst a third species climbs high up the forest trees, and bears rather smaller white nodding flowers."

When the work is completed we shall, no doubt, learn the reasons why Mr. Hiern has

broken away from the usage of De Candolle's "*Lois*," the *Genera Plantarum*, and of the *Index Kewensis*. We have no doubt to Mr. Hiern's logical mind the changes he has made appear requisite and lawful, though we cannot but feel in this case that if really lawful "not all things are expedient." To attempt, for instance, to change the name *Camoensia* to *Giganthemum* (see p. 285) seems to be to reduce the application of the law of priority to something very like absurdity. Had the name *Giganthemum*, which it is proposed to substitute, been previously given by someone else, there would have been some reason for its adoption, but Welwitsch himself discarded the name he had originally given, but only in a preliminary and provisional publication, and himself, breaking the strict law which forbids an author from altering a name once given, adopted *Camoensia*. This is the name under which the plant is described in the *Genera Plantarum*, in the *Transactions of the Linnean Society* (where the plant is figured), in the *Flora of Tropical Africa*, and in the *Index Kewensis*, and till now we never heard or read of it under any other name.

If the matter were not so serious we should think the author was indulging in a practical joke when he abolishes the name *Cola*, and substitutes for the universally-known *Cola acuminata* the name *Edwardia lurida*, of Rafinesque! Where can the author have seen the type specimen of *Edwardia lurida*?

Another illustration of a similar character is the attempt to substitute *Calceolaria* for *Ionidium*, a *Violaceae* genus. This proceeding is copied from Dr. Otto Kunze, but is one which cannot be adopted without great inconvenience. Moreover, it is one which implies that Dr. Kunze is in some way connected with the genus, when, unless we are mistaken, he had nothing to do with it beyond adding to the troubles of future students and monographers. Now, if there is one rule in the botanical code more reasonable than another, it is that which forbids us from attributing to an author something that he has not said. By extension this rule may well be applied to those who append their initials to species and varieties they have not investigated, but whose names they have thought fit to change.

The genus *Calceolaria* of Linnæus is universally known; it has a place in the *Genera Plantarum*, and in the *Index Kewensis*, and is constantly used by gardeners who employ the name a hundred times where the botanist uses it only once.

It is surely in the interests of science to let such names remain, referring to their history in the synonymy. We do not doubt that the author can find justification for his practice, hence we cannot rightly call it frivolous. Nevertheless, many people will find it vexatious and uncalled for. Admitting the occasional necessity for changes of this kind, we plead, in the language of the old Biblical revisers, that the names "be retained as nigh as may be accordingly as they were vulgarly used." In any case, we imagine that *Camoensia*, *Welwitschia*, *Cola*, and certainly *Calceolaria* will remain vulgarly used in gardens for some time to come.

Howevor tiresome these questions of nomenclature may be, they are mere matters of arbitrary arrangement; but in spite of congresses, laws, and codes, and oven examples such as we have mentioned, botanists cannot or will not agree, to follow the rules laid down. In themselves names have no scientific importance, beyond affording a mark for purposes of

* *Catalogue of the African Plants collected by Dr. Friedrich Welwitsch in 1833-4. Part I. By W. P. Hiern, M.A., F.L.S. London: printed by order of the Trustees, British Museum (Natural History), Cromwell Road, S.W., 1896.*

identification, and hence they need not be subjected to treatment which would be essential in matters of science. They fall into insignificance, for instance, in comparison with the subject-matter of this book. In the present case this is so important, the notes so interesting and so valuable for morphological and economic reasons, that botanists must perform feel themselves under such great obligations to Mr. Hiern and the trustees of the British Museum, that they will condone these vagaries of nomenclature. The present volume extends only to the Rhizophoraceae, so that it does not cover more ground than the volumes of the *Flora of Tropical Africa* already published. It has an index of genera, in which the synonyms are given in italics so as to offer some compensation for the changes in nomenclature to which we have alluded, and doubtless, further concessions of this kind will be given at the close.

NEW OR NOTEWORTHY PLANTS.

SELENIPEDIUM BOISSIERIANUM, Rehb. f.

The *descriptio princeps* of the above species was published in the *Xenia Orchidacea*, 1858, p. 176, t. 62, although the name had already appeared in *Bonplandia* in 1854, p. 113, without any description, as related to *Selenipedium Hartwegii*.

Reichenbach, *l.c.*, says:—"We know of only one specimen of Pavon with the label *Cypripedium grandiflorum*, Pillao, 1787. The name *grandiflorum* seems not to be desirable, for there are other *Selenipediums* with larger, or equally large, flowers. We believe, therefore, that the manuscript name must altogether be laid aside, especially as the plant is no true *Cypripedium*; and it gives us much pleasure to dedicate this beautiful plant, probably unique in the collections of Europe, to its proprietor, M. Edmund Boissier, to whom we are under so great obligations."

Unfortunately, that unique specimen was never returned by Reichenbach to its proprietor. It lies buried with the rest of his Orchids for twenty-five years, along with other uniques which had been entrusted to him.

Selenipedium Boissierianum (see figs. 14, 15) is to be found in Peru, and we grow it next to *Selenipedium caricinum*. We have not found it easy to cultivate, and it is only the second time that it has flowered with us; others may have been more successful, although we do not see it often quoted in catalogues. The photographs were taken by Master Frédéric Barbey, Chamabézy, Switzerland, in December, 1896. *William Barbey*.

MICHAUXIA TCHIRATCHEFFI.

Seeds of this fine Campanulaceous species have been collected by Mr. Siehe in the Cician Taurus, and brought into commerce by Mr. F. C. Schmidt at Erfurt. It is a biennial, which forms in the first year a large rosette of 2 feet in diameter, from which springs in the second year a large flower stalk 6 to 7 feet high, branching at the base, and bearing a large quantity of flowers similar to those of *Platycodon Marietii*. I have seen a large photograph of the plant, which Mr. Siehe made in the original locality, and I must say I know few plants of a like majestic habit. It is certainly one of the best importations of biennials of the last ten years. *U. D.*

CATASETUM SEMIROSEUM, G. Beck.

This plant, belonging to the group *Catasetum splendens*, is an importation of Lindén's, and flowered in Prinz Liechtenstein's garden, Esgrub, Moravia, in 1895. Mr. Lauche, the garden director at that place, sent flowers to the editors of the *Wiener Illustrirte Garten Zeitung* for determination, the species being unknown to him, and they have given it the above name. *Catasetum semiroseum* has the following characteristics: petals and sepals whitish or light red, towards the base richly spotted with red, and tinged with red to the apex. The lip is in colour of

a somewhat greenish-white, whiter towards the edge, and towards the base of a wine-red, or almost carmine colour; the spur is, however, yellow, with red spots. The column is white, except at the base, which is coloured purple.

Amongst *Catasetums* figured and described in *Lindénia* is none which quite resembles *C. semiroseum*. *C. mirabile* (*Lindénia*, t. CDLVIII.), which is the nearest approach to it, and which may probably be recognised as a form of it, is deep yellow in colour towards the base, but not in the spur; is tinged with red-brown, not furnished as in *C. semiroseum* with a white and red lip, and greenish petals and sepals, and but little tinged, but resembling *C. semiroseum* in the purple-coloured base of the column.

violet-coloured sepals, and a greenish unspotted lip, as well as a white column. Other forms of *C. splendens*, such as *C. Lindénii* (*Lindénia*, t. CLXIII.), have more yellow colour in the flowers, and a yellow-tinted lip.

Catasetum semiroseum appears therefore, according to our opinion, to be an interesting new, and hitherto undescribed form of *C. splendens*, which deserves especial admiration by reason of its pretty colouring. *Dr. G. V. Beck*.

THE DEODAR AS A FOREST TREE.

I CANNOT say I am greatly impressed by the testimony brought against this tree by your correspondents. I asked for information as to its merits

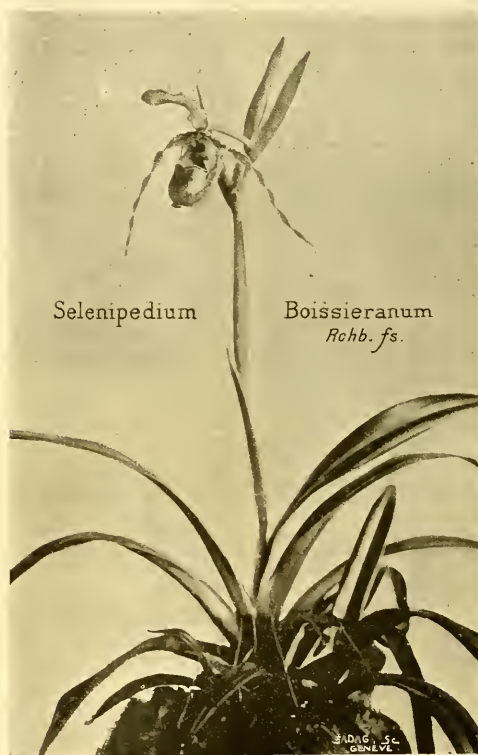


FIG. 13.—PLANT AND FLOWER OF SELENIPEDIUM BOISSIERIANUM.

This last feature is not observable in any of the magnificent examples of forms figured in *Lindénia*, t. III, VIII, notwithstanding the fact that amongst these are found several which, in the colouring of the petals and sepals, come very near to our plant.

Among similar *Catasetums*, *C. splendens* var. *Alicie* (*Lindénia*, t. CDLVII.) exhibits towards the apex (but not at the base) darker purple coloured sepals and petals, a pure white lip, with a yellow-coloured expansion of the spur and a white column; and in these flowers figured in t. DII, to the left-hand beneath the figure of *C. splendens*, the spotting of the perianth is missing. *C. splendens* var. *rubrum* has a yellow-coloured lip; *C. Luciani*, Cogn. (*Lindénia*, t. CDLIV.), possesses petals that are less spotted, dark

as a timber-tree under sylvicultural or plantation treatment. Your correspondents indulge in surmises, but do not seem to have the trees. Mr. Divers' letter is an example. I know the kinds of trees that thrive at Belvoir, and it must be one of the few places where its botanically identical relations—*Cedrus atlantica* and *Libani* do so well, and the Deodar is a failure—for, as a rule, where these two grow, the other will, and does thrive. Sir C. Strickland, in your pages, and elsewhere, says I do not seem to get much support. Well! there are our own trees, on one of the bleakest aspects in Yorkshire, and they will take a good deal of arguing away. Then, there is Veitch's *Manual of the Coniferae*, where the species are carefully described,

which supports me thoroughly. Next, there is *Johannes Seutil's Pinacer*, even more favourable in the same direction. Next, Grigor's *Arboriculture*, which says ditto, and describes fine examples forty-five years of age, not far from John o' Greats, and at other places in the Highlands; and lastly, there is Brown's *Forester* on the same side. Experienced cultivators and writers may be credited, to some extent, with knowing something of their subject. Can Sir Charles match them on the other side? As to Mr. A. D. Webster's assertion that the Deodar is

but for comparison I herewith send you good, mature, thick pieces of old limbs of the Deodar, the Cedar of Lebanon, and the Larch—from trees growing almost side by side and under equal conditions. The Deodar limb is about forty years of age, Cedar of Lebanon a little older, and the Larch older still. I have cut them and planed them to show the wood sectionally and lengthwise, and you will notice that in the Larch and Deodar the heart-wood appears to be formed earlier, and is much more clearly defined, than in the Cedar of Lebanon—which

Deodar I cannot help giving the following further quotation, corroborating, as it does, my opinion of its sylvicultural merits:—

"In these forests, as elsewhere, Deodar is pre-eminently a shade-enduring tree, especially during the first half-century of its life. Seedlings will remain alive under the densest cover for years.

"The preceding figures prove clearly that young Deodar can not only survive for many years under a dense leaf-canopy, but that a dense leaf-canopy is less hurtful to it than complete exposure to weather influences, the most destructive of which are evidently drought, strong heat, and the weight of superincumbent snow, which breaks the leading shoot and bends down and distorts the thin flexible stem. Thousands of vigorous saplings and poles attest the fact that, provided the cover surrounding and overhead is not extremely dense, young Deodar is always able, with its long, slender, graceful leading shoot, to pierce through the over-topping leaf-canopy into the direct sunlight above without suffering any very appreciable diminution of vigour. Hence thinning made with the object of giving more light and growing room to Deodar must be made cautiously and with a sparing hand. No greater mistake could be made than to thin out the forest surrounding or overhead in any wholesale manner."

In conclusion, I should imagine that there are plenty of thriving examples of the Deodar throughout the country if we could hear of them. What became of the ton of seed sent from India by the Government between 1850 and 1860? The late Mr. McNab, Curator of the Edinburgh Botanic, stated, in 1867, that this seed was distributed among three nurserymen, viz., Messrs. Glendinning, of Chiswick Nursery, London; Messrs. Skirving, Walton Nursery, Liverpool; and Messrs. Lawson & Son, Edinburgh; and that the quantity raised in Edinburgh was very large in proportion to that raised elsewhere, because the seed was, for the first time in Europe, sown broadcast, like Scotch Fir, in the open air, instead of in pits or frames, as in London and Liverpool (*The Gardener*, January, 1867). Mr. McNab speaks of many of the earlier-planted trees he knew of as being in a "faultless state," but says the unprecedented winter of 1860-61 injured many Deodars, chiefly those planted in damp situations, and those trees suffered worst which had their branches broken and disrupted by the frost, while other Deodars growing side by side suffered no injury whatever. In any case, I am very dubious about one cold spot here, where also every leaf of every tree is coated with soot from the surrounding coal and iron-works, being an exceptionally favourable spot for the Deodar, and we have a good few up and down of all sizes in all sorts of situations, and have not lost one; while the trees that have grown fastest are in a mixed Fir plantation, where they beat the Cedar of Lebanon, the Spruce, and keep pace with the Scots Fir and other species. I would have thought also that the Deodar would have succeeded at Sir Charles Strickland's fine place, near Bridlington, which I had once the pleasure of being shown over, and where I saw many fine trees, including, if I remember rightly, the Deodar. I remember my visit very well, for there I saw, for the first time the rather rare *Sirex* *gigas*, a destructive Pine-borer; and a young plantation of Larch artificially pruned of their lower branches, and wondered what was the object of it. *J. Simpson, Wortley, January 15.*



FIG. 14.—FLOWER OF SELENIPEDIUM BOISSIERIANUM. (SEE P. 54.)

not well adapted to exposed sites, the correspondences in your pages goes at least to show that exposed sites are the only sites that do suit the tree. In a very lengthy and particular report of the Deodar, copied into *Woods and Forests* from *The Indian Forester* in 1884, it is stated that in its native haunts the Deodar "avoids southerly slopes, but thrives on every other exposure, being perhaps most vigorous and abundant on slopes facing the north-east."

The same report states that the Deodar "avoids the bottoms of ravines and valleys and similar damp places," a fact fully corroborated in *The Field*, in regard to this country. The timber of our Deodars is neither soft nor inferior. I cannot send you a tree,

means earlier maturity. The Deodar I have marked by a "D" on the bark, the Cedar of Lebanon by an "L," and the Larch is not marked at all. The examples sent are not seasoned, and were all cut off the tree two days ago. "Hard and heavy" is the Admiralty test of timber, and I think the Deodar is about the best example of the tree (very heavy, Ed.). I think little of any wood taking a fine polish as a test. The Larch, by common consent, is a coarse wood in the grain, but it will polish like a looking-glass. I have a book-case made from a Larch tree (grown at Brunolanz) forty years ago as glossy as well-varnished mahogany to this day, and neither warped nor shrank. From the *Indian Forester* report on the

ORCHID NOTES AND GLEANINGS.

ODONTOGLOSSUM AT WALTON GRANGE.

For many years W. Thompson, Esq., J.P., of Walton Grange, Stone, Staffordshire, has been known to possess one of the finest collections of *Odontoglossum* in the country; and so well are their requirements understood by Mr. Thompson and Mr. Stevens, his gardener, that it would be almost impossible to pay a visit to Walton Grange and not find plants in flower that would gratify the most

justidious orchidophile. At the present season of the year no one would expect to find a large number in full bloom in any one collection; therefore, the relatively fine display at Walton Grange is calculated to occasion surprise. Amongst the many *Ontotoglossum crispum* in flower, there was none that did not possess beauty of form, much substance, or distinctive markings. Of named varieties, there were *O. c. fastuosum*, the original plant named by Reichenbach, showing the distinctive small-sized, regular, bright purplish-blown spots; *O. elegantiss.*, conspicuous for its pale yellow ground colour, and chocolate-brown markings; *O. Andersonianum*, represented by several forms, each differing more or less; *O. madroese*, a species not often observed growing robustly, was carrying five fine large blooms which had plenty of substance; *O. Pescatorei*, a single plant, carrying four large branching spikes, and one hundred flowers. Plants of *O. tripidians*, *O. pulchellum majus*, *O. vexillarium* were remarked in full bloom. The following species and varieties were well represented, viz., *Oncidium Forbesii*, *O. tigrinum*, *O. crispum*, *O. undulatum*, *O. orinthorhynchum*, and its beautiful and fragrant variety, *O. o. album*. The darkest form of *Leclia* accepts that I have yet seen is found in this collection—a beautiful specimen carrying six large flower-spikes. I also observed an especially fine specimen of *L. Gouldiana*, with seven flower-spikes—the variety one of the best in cultivation; also the useful *L. autumnalis-arubrensis*, Backhouse, a portion of the plant figured in the *Orchid Album* was in bloom, side by side with the variety *Al.*, or *Leclia-Catleya Arnoldiana*, obtained by crossing *L. purpurata* and *C. labiata*. *Cypripediums* are but new favourites with Mr. Thompson, and as yet the collection of them is not a large one, although those he already possesses are of the choicest varieties. The following are some of those in flower at the time of my visit:—*C. Lesanum*, *C. L. giganteum*, *C. L. superbum*, *C. Calypso*, *C. Lathamianum*, *C. Swiobournel*, *C. insigne* Dorothy, and *C. Minoas*, a new *Velichia* hybrid, of which more will yet be heard. Of *Cattleyas* and *Laelias*, *Vandas*, *Zygopetalums*, *Masdevallias*, and *Agrostecums*, there was an exceptionally good display of bloom for the season. *J. I.*

A CASE OF ABNORMAL FLOWERING IN DENDROBIUM NOBILE.

I have a plant of *Dendrobium nobile* Wallichii now in flower which has the peculiarity of flowering two years in succession from seven of the nodes; five are on one and two on another of the old pseudo-bulbs. In all there are sixteen flowers, which are quite as large, and the colouring as good, as those on the young pseudo-bulbs. During my experience I have never noticed such an occurrence before, although some of your numerous readers may have done so. In my opinion the variety *D. n. Wallichii* is far superior to the ordinary *D. nobile*, as the growths or pseudo-bulbs are longer and stouter; the substance and colouring of the flowers are much better, and the nodes are not so liable to turn to growths instead of flowering, on a plant being placed in a brisk heat, as is the type. I grow both side by side in the same house, the plants thus receiving similar treatment. *W. Silcock, Hollycombe Gardens, Liphook.*

THE ROSARY.

THE PARENTAGE OF ROSES.

Up till a comparatively recent period this was a subject which from Rose-cultivators received inadequate attention. Among those who were somewhat exceptional in their estimate of its importance, and perceived intuitively that the origin of a Rose had much to do in the way of determining its capabilities, was the late Henry Bennet, one of the greatest of modern raisers, many of whose creations, such as Grace Darling, Viscountess Folkestone, Captain Hayward, Mrs. John Laing, Princess Beatrice, Cleopatra, and Princess of Wales, quite rival those of the late M. Guillot. All of these have

almost ideal characteristics; they are vigorous in habit, distinctive in colour, exquisite in form, attractive in fragrance, and very floriferous. And there can be no question that attributes such as those which distinguish these varieties were largely the result of cross-fertilisation.

The good work in this direction begun by the late Henry Bennet has been carried on effectively by Mr. William Paul, Mr. George Paul, and the Messrs. Dickson of Newtownards; and hence we have at present, in all probabilities, finer varieties of the Rose, and harder in constitution than in any previous period, however eminent for productiveness, in the history of horticulture.

Our knowledge of the derivation of modern Roses is necessarily fragmentary, but perhaps all the more interesting by reason of the limitations by which it is environed. Among the oldest of their august parents is the venerable *La Reine*, whose name I greatly fear is in great danger of being forgotten, but which may still be found perhaps in the late Mr. Rivers' *Rose Amateur's Guide*, a work lovingly written, and unavailingly revered. It is not discoverable in modern catalogues, for the obvious reason that like many of its contemporaries, it has long been superseded, and therefore consigned to oblivion. From it Levet derived in 1871, François Michelon, a most commanding Rose; and two years earlier, that grand autumnal bloomer, Paul Neyron. General Jacqueminot, raised as far back as 1853, has proved itself a most prolific parent; and its descendants, such as Pierre Notting, Xavier Olibo, Sénateur Vaisse, Charles Lefebvre (so greatly embellished by the Dean of Rochester, who affirms that its first appearance marked an epoch in the history of the Rose), Alfred Colomb, and the incomparable Duke of Edinburgh, varieties not yet entirely superseded by any of their successors, have been for the most part, I might almost say inevitably, in virtue of their origin, of brilliant complexion. Jules Margottin has also been productive; to it we owe the still highly popular Beauty of Waltham, raised by Mr. William Paul in 1862, valuable alike as a garden and exhibition Rose; Duchesse de Vallombrosa, Magna Charta, and Thérèse Levet; the last-mentioned variety being the parent of that beautiful Scottish hybrid perpetual entitled Duke of Fife, "obtained" (I believe that is the correct term) by the Messrs. Cocker of Aberdeen, who have also given us two of the sweetest of all modern introductions, Duchesse of York and Duchesse of Fife, of which the latter was derived from Countess of Rosebery.

From Sénateur Vaisse have come Madame Victor Verdier and other bright varieties of kindred character; while Charles Lefebvre, raised by that consummate French rosarian, M. Lacharme (who was also an eminent wine-originator) in 1861, has given us Dr. Andry, of lustrous carmine hue; Horace Vernet, a splendid crimson of velvety texture, but, very unfortunately, of most limited capability in the direction of growth; Lord Macaulay, a Rose of great substance and brilliancy, introduced into cultivation in 1863, a contemporary of Marie Bauman and Duchesse de Morny; and Mrs. Harry Turner, a much more recent production, of exceptionally beautiful colour, its crimson hues flashing through deep maroon like the glory of sunset through a purple cloud.

I should ere this have mentioned that among the finest dark descendants of General Jacqueminot are Prince Arthur and Duke of Albany, the former raised by Mr. Benjamin R. Cant of Colchester in 1875, the latter in 1883 by Mr. William Paul. These are among the grandest Roses in my garden. I find them much more vigorous than Horace Vernet, and infinitely more reliable than such varieties as Abel Carrière and Prince Camille de Rohan, which, if grown in a strong sun, are certain to be "burned;" while, if relegated to a shaded region, their flowers, for lack of inspiration from the heavens, fall to appear. A. K. Williams, a Rose of less capricious character, of perfect form, and satin-crimson hue, is generally supposed to have been derived from Alfred Colomb. Duke of Edinburgh is the still-surviving parent of a most fascinating family, including Brightness of Cheshunt, the eminently exacting Reynolds Hole,

whose virtues and vices are exactly those of Pierre Notting and Prince Camille de Rohan; the luminous Duke of Teck, and the beautiful maroon-shaded Sultan of Zamibar. No cultivator who compares that darkest of crimson Roses, Sir Rowland Hill, with Charles Lefebvre, could fail to find the affinities existing between these. Yet here again, the law of variation has found room to intervene. It is also discoverable in Caroline Testout and Augustine Guinoisseau, both of which are interesting variations from the fragrant La France. It is not quite so observable in Duchess of Albany, unless in the stronger growing habit of that variety, and its somewhat darker hue. Of La France itself the origin was not known, even to M. Guillot, by whom it was discovered among his successful seedlings in 1867—a memorable year in the history of the Rose.

Catherine Mermet has been rivalled, if not eclipsed, by several of her daughters, such as Bridesmaid, the Bride, and Muriel Grahame, all of which possess distinctive endowments, and the "fruity" fragrance of their eminent parent. White Lady is an artistic advance on Lady Mary Fitzwilliam, a majestic Rose, from which came also Margaret Dickson, one of the most notably endowed of the white hybrid perpetuals, whose colour, however, has been derived from Merveille de Lyon. The great Irish Rose (Margaret Dickson) is an inveterate grower, and has a tendency to expend its strength in the production of superfluous wood; this, and an occasional lack of compactness in the centre, are its only limitations, for which its remarkable beauty, its combined strength and sweetness, make ample amends. By reason of its purer colour and greater productiveness, it is much more valuable than Marchioness of Londonderry for garden decoration. *David R. Williamson.*

FERN VARIETIES.

REFERRING to the interesting series of articles on "Methods of Plant Propagation" which are now appearing in your columns, I note that the writer, "Experience," follows up a very clear and accurate description of the *modus operandi* of Fern propagation through the spore by a theory of variation which I cannot help contesting. "Experience" writes, "I have little hesitation in saying that all the singular and interesting varieties in the Lady Fern (*Atlyrium*), in the Button-hole Fern (*Scolopendrium*), with which the late lamented Mr. Sim, of Foot's Cray, made such a long catalogue of, resulted from cross-fertilisation during the complicated germination of the spore." Passing by the fact that a reference to Mr. Sim's Fern Catalogue, which lies before me as I write, and is dated 1863, is scarcely up to date, considering the wonderful development of British Ferns in the subsequent thirty-three years, I would call attention to the fact that of the fifty-seven varieties described by Mr. Sim therein (many of which would not now be grown, being imperfect seedling forms), all the typical good varieties were found wild in various parts of the country; while in Mr. E. J. Lowe's recent list (1891), out of 313 varieties of this species described, no fewer than ninety-six are wild finds, and the great majority of the rest are sub-varieties raised therefrom, only a few being recognisable as crosses. With regard to the Hartstongue or Button-hole Fern (a new name to me, but very appropriate as descriptive of the appearance of the long spore heaps), the type forms are again all wild finds, although Mr. Lowe has succeeded in raising an immense number of combined varieties. In his list of varieties of this species, no fewer than 218 were found wild. The simple fact, however, that these sports originate so freely in a wild state does not of itself confute "Experience's" theory; it must be considered, in conjunction with the other facts, that these wild sports are almost invariably "solitary" finds so far as their individual peculiarity is concerned, and that there is absolutely no evidence to show that the mere cross-fertilisation of two normal forms induces a change of type. In wet weather it is highly probable that among closely-crowded prothalli cross-fertilisation is frequent, and

doubtless the atherozoids of one prothallus are often carried to another by insect agency, so that if this caused sporting, varietal finds should be frequent enough. As it is, however, though a large number are now in culture, the wild, i.e. new finds, are but slowly accumulated, and it needs a very keen hunter, a vast stock of patience, and a lifetime to boot to form a collection worthy of the name on one's own account by simple search. On the other hand, when once a "break" from the normal is found, it is usually possible, starting from this, to "improve" it or increase its peculiarities by selective culture from spores; but here again there is no evidence to show that the subsequent diversity of the seedlings is due to cross-fertilisation, except where different varieties are purposely sown together in order to obtain combined types. At one of the Fern conferences some years ago, I exhibited a number of *Athyria* raised from unmixt spores, which in their diversity rivalled even Mr. E. J. Lowe's extraordinary crosses, though they all sprang from one plant and one sowing. What cause the initial variation in an original spore is a profound puzzle, and a marvel to boot, when we find

source of biological phenomena, from which doubtless, sooner or later, a fuller comprehension of the underlying laws of variation will result. *Chas. T. Drury, F.L.S.*

WINTER-FLOWERING PLANTS AT ARUNDEL CASTLE GARDENS.

The demand for flowering plants and those with ornamental foliage is great at Arundel Castle all the year round. Especially called for are flowers for embellishing the church at festive seasons. At the present time there is a grand display of *Calanthes* in one of the houses, which is a notable example of good cultivation. Some of the plants of *C. Veitchii* have as many as forty expanded flowers on some of the spikes, and so great is the vigour of some of the bulbs that four spikes are produced. Some were observed in which the flower-spikes emerged from the extreme top of the pseudo-bulb. *C. vestita rubra* and *C. v. lutea* are also grown in great numbers, and do equally well. On the occasion of a recent visit 500 spikes of these three varie-

CULTURAL MEMORANDA.

FRUIT-GROWING IN LONDON SUBURBS.

FRUITS of various kinds can be grown successfully in the suburbs of London, which at times are enveloped in fog. Mention was made in a recent issue of the *Gardeners' Chronicle* of Vines at Tewkesbury Lodge, Forest Hill, which I may say I had the pleasure of seeing about eighteen months ago, and which struck me as being thoroughly well done. The viney is a very fine house or houses. I was also struck with the wide distance apart at which the Vines are planted, which, no doubt, is a great aid to successful Grape culture. I may be wrong, but should say that the Vines had a space of 6 to 7 feet between them. But there are other places equally near town where fruit-growing is carried on with marked success, namely, at Gunnersbury Park and House; also Mr. Tate's, at Streatham, and at places where the gardener is not allowed to exhibit. At one place in particular, Hazlewood, Upper Norwood, Mr. Munday, the late gardener, produced very fine Grapes, and thirty years ago, when I was there as under gardener, Peaches and Nectarines, finer in size, shape, colour, and flavour could not be found elsewhere. *W. Ravenhill.*

A METHOD OF CULTIVATING EUPHORBIA PULCHERRIMA.

Many of my friends have asked me to put in print my methods of cultivating *Euphorbia* (*Poinsettia*) *pulcherrima*. I take the cuttings in August, and put them singly into 3-inch pots in a propagating-frame, and as soon as the pots are filled with roots they are potted into 5-inch pots. The compost I make use of consists of turfy loam, peat, silver-sand, charcoal broken up small, and a small quantity of bone-meal. I keep the cuttings near the glass in the stove for a week or two after potting them, then set them in a cold-frame, affording plenty of air by day, shading them for a time from bright sunshine, keeping them on the dry side for a time, and never afford stimulating food till the bracts begin to show. The plants are removed to a house with a minimum degree of warmth of 60° about the beginning of October, and fed with Thomson's manure; and I had plants at Christmas with bracts that measured 17 inches across. The secret of success in growing this plant is to get the wood thoroughly matured. *Alexander Hay, Ashford Gardens, Wiltshire.*

TREES AND SHRUBS.

PICEA OBOVATA.

THIS species is by no means commonly cultivated, the climate of our country, save in a few inland situations, seeming unsuitable to its requirements. It is hardly enough, coming from Siberia, yet it has generally a miserable and starved appearance, which is probably owing to our mild and humid climate. I have seen a good specimen growing in an open, airy, though sheltered position, on high-lying ground; but, indeed, neither in an ornamental nor useful capacity is the tree worthy of culture. It is somewhat after the style of the common Spruce, but altogether lighter and with little branches, and drooping branchlets. Cones are freely produced, these being sub-erect, and just half the length of those of the common Spruce, or about 3 inches. They are nearly egg-shaped, or obovate, the scales' edges being quite smooth, as opposed to those of the common Spruce which are crenulated or wavy. Unless for planting as a botanical specimen in the pinetum, I would not suggest that *Picea obovata* be procured.

PINUS LAMCIO PALLASIANA.

THIS is a far more distinct and valuable forest tree than is generally supposed, although in the latter respect it cannot compare with the species in the production of straight clean timber, as it branches more freely, and these are proportionately heavier and larger, and produced down almost to the ground-level, on trees growing in the open—a rare occurrence with



FIG. 15.—GROUP OF CALANTHES AT ARUNDEL CASTLE.

an entirely new plan introduced on more symmetrical beautiful lines, combined with such stability and constancy that the spones produce the new type exactly for generation after generation. That cross-fertilisation does this is out of the question; myriads of flowers are so constructed that cross-fertilisation is ensured, and it seems to be a beneficial factor throughout. This, however, tends to preserve the type by levelling down individual peculiarities rather than to lead to the wide and sudden departures to which your correspondent refers. As regards systematic hybridisation, that has long since passed the "endeavour" stage, the possibility of crossing allied genera being demonstrated by Mr. E. J. Lowe's combination of *Ceterach officinarum* and *Scolopendrium vulgare*, a note upon which appeared in your columns some time back; while Mr. Schneider's successes with *Polypodium vulgare* and several widely different exotic species, P. Schneideri to wit among them, place the practicability of union between allied species beyond all doubt. Of late years, indeed, a very considerable addition has been made in this direction to our knowledge of Fern life, and since the attention of scientific botanists has been brought to bear on the varietal forms, they have been found to constitute a rich

ties combined were to be seen in one house, arranged on a groundwork of Ferns, forming a very fine sight (see fig. 15). Other species of Orchids are cultivated, viz., *Cattleya*, *Dendrobium*, *Cypripedium*, and *Odontoglossum* of different species; the charming *Masdevallia tovarense* in well-flowered examples; grand specimen of *Cymbidium eburneum* which was throwing up dozens of flower-spikes; *C. Lowianum* about to expand its flowers—a well-grown specimen, with several fine flower-spikes. *Euphorbia* (*Poinsettia*) *pulcherrima*, and other *Euphorbias*, are extensively grown; many of the former had fine bracts, which measured 18 inches across. Among other plants observed in quantity were *Primulas*, zonal *Pelargoniums*, late varieties of *Chrysanthemums*, *Cinerarias*, *Cyclamens Vulcan*, *Butterfly*, *Salmon Queen*, &c. *Lily of the Valley* is extensively forced, and single crowns are those principally used. *Begonias Gloire de Sceaux* and other varieties for winter bloom receive much attention. Several houses are filled with *Palms*, *Codiaeums* (*Crotoms*), *Dracaenas* in well grown examples. I also remarked some grand *Richardias* carrying many spathes. The various departments are well managed by Mr. Burberry, the Duke of Norfolk's head gardener. *A. O.*

the species. I measured a short time ago one of the largest specimens of *P. L. Pallasiana* growing in this country, which was fully 75 feet in height, the spread of branches nearly as great, with a stem girth at 3 feet of fully 9 feet. The tree is growing on light sandy loam in a Surrey park, and it is certainly a very handsome specimen, the long, sweeping branches, much-divided trunk, and deep green bristling foliage rendering it peculiarly distinct and ornamental.

The cone production of *P. L. Pallasiana* is remarkable, at least when compared with the species, nearly every branchlet tip bearing a trio. The cones are much bigger than those of *P. Laricio* proper, being from 3 to 4 inches long by 1½ to 2 inches at widest part, and of a pleasant yellow-ochre colour. Even the lower branches bore cones freely, a by-no-means common occurrence with any member of the *Pisium* family.

But the reason that I wish particularly to bring this variety under notice is for its now justly acknowledged value for planting in peaty soils that are not over-dry or well drained. A curious example of this was brought on my notice recently, where a Larch plantation framed on peat bog turned out a failure owing to drainage having not received sufficient attention. The ground certainly had been drained after a fashion, but too few water-channels had been cut, and the consequence was that, owing to excessive dampness, all the trees, excepting such as had been planted by the ditch-sides, became covered with a lichen, and gradually would have died out had they not been removed. A number of fresh drains were cut, the original ones cleared out and deepened, the Heath, Bilberry, and other shrubby growth cleared away, and the ground replanted with the common Scots Pine and the present variety, *P. Laricio Pallasiana*. These trees are now models of beauty and health, the foliage being of the brightest and healthiest description, and the rate of growth rapid—all pointing out that they are peculiarly suitable for peaty soil and a fully exposed situation. *A. D. Webster.*

COLONIAL NOTES.

A NEW YELLOW-SPATHED RICHARDIA.

I ENCLOSE a photograph of two plants of a new golden *Richardia*, grown and flowered by me at my residence, Rhine Villa, Sea Point. You will notice the bold, vigorous habit, and bright variegation of the foliage. This, combined with the large, deep, golden blooms freely produced, make a plant difficult to surpass in effectiveness. The plants come from a different locality to that in which *Richardia Elliottiana* and *Pentlandi* were discovered, and they are in every respect an improvement upon them. I flowered them for the first time last season, the two pots producing sixteen spathes. The same plants now in flower, carry nineteen blooms, one of which has a "double" spathe. The colour is of the brightest shade of yellow, and the spathes are very large. *Donald Ross, 80, Bree Street, Cape Town, South Africa.* [The photograph sent, exhibits two stocky plants with broad leaves set on rather short petioles, regularly spotted over the entire surface of the blade. Spathes as high or higher than the leaves. Ed.]

THE WEEK'S WORK.

THE HARDY FRUIT GARDEN.

By H. W. WARD, Rayleigh, Essex.

The Propagation of Gooseberries and Currants.—Cuttings of approved varieties should be taken off at once. They should be made about 12 inches long and consist of the butt ends of straight shoots. Remove all the buds except four at the top, to obtain bushes with 5 or 6 inches of clear stem above ground. The cuttings should be inserted 6 inches apart, in rows 12 inches asunder, and a border under a north or east wall will be a suitable place for them, but they will root equally well in the open. The ground having been dug, put the line

down, and stick the cuttings about 3 inches in the ground at the distances indicated, and tread the soil on either side in doing so.

Varieties of Gooseberries.—White: *Cheshire Lass*, *Whitcomb*, and *Bright Venus*; (Yellow), *Galen Drop*, *Early Sulphur*; *Yellow Champagne*; (Green), *Berry's Early Kent*, *Green Gascoigne*, *Green Hedgehog*, *Rosebery*; (Red), *Whinham's Industry*, *Crown Bob*, *Rifleman*, *Lancashire Lad*, *Red Champagne*, and *Warrington*. *Currants*: (Black), *Baldwin's Champion*, *Carter's Champion*, and *Lee's Prolifica*; (Red), *Ruby Castle*, *Red Dutch*, and *Reine Victoria*; (White), *Transparent* and *White Dutch*.

Pruning Currants.—Established bushes of Red and White Currants should have the young shoots cut back to one bud from the old growth; leaving from 5 to 8 inches of young wood in pruning young bushes until they reach the desired dimensions. Black Currants, as well as Gooseberries, require different treatment. The young growths of established bushes should be thinned out (not spurred backed as is frequently done), and the later growth cut back to one bud, topping any of the young shoots retained to form the bushes that may be likely to touch the ground when heavily laden with berries. Cut out one of any shoots that cross each other, so that the centres of the bushes may be left open.

Planting Young Trees of Gooseberries and Currants.—In making plantations of Gooseberry and Currant bushes, a distance of 6 feet should be allowed between the rows, and between the bushes in the rows. The space between the rows and plants can be cropped with Cabbages, Cauliflowers, and Ashleaf Kidney Potatoes, until the bushes have attained to the full size. A good dressing of manure should be well dug into the land previous to planting. When planting the bushes take hold of the stem of each and shake it in an upward direction, so that the soil is trickling along all the roots, which should remain within 6 or 8 inches of the surface when the soil has been trodden and made level. When planting Gooseberry and Currant bushes in borders adjoining walks, and it may be to take the place of old exhausted bushes, prepare the holes about 15 inches in diameter and the same depth, and incorporate a few shovelfuls of short manure with the excavated soil. Should the staple be of a stiff nature, add a little leaf-soil, wood or coal ashes.

Strawberries.—If new plantations are to be made in the spring, the ground should be prepared by digging deeply into it a liberal dressing of manure; or better still, trenching it between 2 and 3 feet deep, according to the natural depth and quality of the land, breaking up and retaining the subsoil in the bottom of the trenches, and working in two or three layers of short dung. If the work be done at once, the subsoil ground will have ample time to settle before planting is done. For general use *Royal Sovereign*, *Auguste Nicaise*, and *Sir Joseph Paxton* are sterling varieties.

THE KITCHEN GARDEN.

By W. POER, Gardener, Hightclere Castle, Newbury.

Early Cauliflower.—A sowing of Cauliflower should now be made thinly in boxes or pans, selecting what is known to the trade as extra Early Forcing or First Crop, planting the boxes, &c., on a shelf in a house or pit heated from 55° to 60°. As soon as the plants have a true leaf, prick them off carefully into boxes filled with rich loam and leaf-mould in about equal proportions, at 4 inches apart each way, and replace them in full sunlight, admitting air carefully in increasing quantity till they get properly hardened off, in readiness for planting out about the end of March. For exhibition purposes, seeds of *Sutton's Magnum Bonum* may also be sown; and this variety being a little later than *First Crop*, and an excellent Cauliflower for any purpose, will form a succession. Autumn-sown plants in frames or hand-lights must be aired freely whenever there is no frost, the lights being removed when it does not rain or snow, and coverings of mats or litter only being used at night in the event of hard frost.

Early Cabbage, Lettuce, and Celery.—If the autumn-sown Cabbages are a failure, means should be taken to remedy this to some extent by sowing seeds of some good dwarf early variety in boxes, and growing them on similarly to Cauliflowers, for planting out-of-doors early in March. If properly grown and hardened, and given a warm position when planted, these become fit for use almost as soon as those planted out in the autumn. A little Lettuce seed should also now be sown, selecting a good early *Cos* variety for this sowing; or, if a Cabbage Lettuce be

preferred, some seeds of *Commodore Nutt*. Sow a pinch of *Celery* in a pan, and place in a Cucumber or Melon-pit till germination takes place, covering the seed very lightly with sandy soil, and a square of glass on the edges of the pan. For August and September use, nothing surpasses *Sutton's Early Gem*; whilst for early exhibition, nothing is better than *Wright's Giant* white, and *Standard Bearer*, red.

Leeks.—Where large and well-blanced Leeks are required early, seed may now be sown thinly in pans or boxes, placed in a gentle heat, and treated in the same manner that I advised for Onions. They may, however, be allowed to grow rather for a longer time in the seed boxes before being pricked off, using rich turfy loam, to which a good proportion of half-rotted leaf-mould has been added, all pressed firmly together in the boxes, allowing 3 inches space between the plants, and growing them for a time in a greenhouse or warm frame. If afforded a too high temperature, the plants will be likely to throw up flower-heads in the early summer. The plants being gradually hardened off may remain in the same boxes till the land is ready to receive them, towards the middle or end of April. The remains of last year's main crop may now be lifted and laid in on the north side of a wall or fence, where they will keep in good condition longer than if allowed to remain in the open quarter, the ground also being free for other uses.

Horsradish.—The present is a good time to make new or re-make old *Horsradish* beds, the ground being trenched to a good depth. If an old bed is to be re-planted, pick out every root, keeping the largest and cleanest for use, and the next size for planting; put a thick layer of rich manure at the bottom of every trench as the work proceeds, the roots being planted with the dibble in rows 2 feet apart, and 1 foot from set to set.

Parsley.—Should the supply of Parsley seem likely to be unequal to the demand, seed may be sown now in boxes, placing these in heat, pricking off the young plants when an inch high into a frame over a gentle bottom-heat, keeping them close for a few days till established. A supply from the same sowing would also be available for planting on a warm border in March, and will generally prove very useful.

PLANTS UNDER GLASS

By G. H. MAYCOCK, Gardener, Luton Ho, Luton.

Winter-flowering Carnations.—The time has arrived when these plants may be propagated by means of cuttings. First prepare a light kind of compost, having plenty of sharp sand or road grit incorporated in it, place four rather wiry cuttings in 3-inch pots, make firm, afford water, and plunge in a gentle bottom-heat in a frame or forcing-house. In a month they will be ready to pot singly in 3-inch pots. Beware of letting water lodge in the axils of the leaves, and aim at getting them to strike quickly. If numerous cuttings are obtainable, any potfalls which appear to be strobony may be thrown away, and another batch put in. Avoid excessive heat, or the constitution of the future plants will be weakened. A bottom-heat of 70°, and top-heat of 65°, should be maintained; gradually harden off the plants after the first potted.

Cannas.—These useful plants are gaining in public favour, and deservedly so, being of easy culture, ornamental, and free flowering. Here they are largely used for bedding-out purposes, and for that purpose they receive similar treatment to that afforded the *Dahlia*. For pot-culture, I prefer keeping and resting them in a cold-house. A start may now be made with the batch intended to flower early. First prepare and mix thoroughly together, two parts of loam, one of leaf-mould, one of sand and dried cow-manure, with a small quantity of charcoal. To save time, place them in their flowering-pots, the size of which will depend on the size the plants are intended to reach; but for ordinary purposes, 3-inch pots will be found sufficiently large. Not much drainage is required, still it must be efficient. Shake out and select a few of the strongest crowns to be potted, cutting away the back part of the old rhizoms; water well when potted, and place on a stage or shelf near the glass in the intermediate-house. *Cannas* need an occasional fumigation.

General Work in the Plant Houses.—A pinch of seed of *Begonias*, *Gloxinias*, and *Celcosias* may now be sown; and take cuttings of zonal *Pelargoniums* if plants to flower in the autumn are wanted. Divide and re-pot plants of *Aspidistra lucida variegata* which may be

too large for general purposes, placing them in gentle heat to re-establish. The compost used for them must not be rich, or the variegation will disappear; but it may consist of one part loam, one leaf-soil, one road-grit, and one lime-rubble. On the plants getting established, remove them to a cooler house, and gradually harden them off. Cuttings of *Panicum negatum*, rightly *Opiluncus Burmanni variegatus*, for decorative purposes should now be taken, using 2 or 3-inch pots for them, as being the more useful size, and placing six cuttings in a mixture of loam, leaf-mould, and sand. They will readily root, and may then be removed to the side-stages of the stove or the conservatory. A good stock of *Isoetes gracilis* should now be potted-up for similar purposes, dividing up old plants into small pieces, and using, as before, 3-inch pots. When the roots permeate the soil, afford plenty of water; and when root-bound, afford weak liquid-manure water, placing a saucer under each. *Carex variegata* and *Enalapa japonica variegata* may be similarly dealt with. Proceed with the propagation of foliage and other decorative plants too numerous to mention here, a little perseverance at this season saving time during the busier days to come.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower, Barford, Dorking.

Eulophiella Elisabethae.—Any of this comparatively new plant which are strongly rooted, and whose flower-spikes are beginning to push up from the base of the growth of the current season, should be afforded plenty of water at the root, taking care that the soil be not solidened with it, as the flower-spikes would then be liable to rot. Whilst the weather continues dull, the plant should be brought near to the roof-glass; but, although this species is not hurt by strong light at this season, it must not be direct sunlight, or the leaves will soon be injured. Those who have purchased plants recently imported, should place them in crocks only, as a commencement, and stand them in a shady part of a warm Cattleya-house, damping the stage and the sides of the pots once or twice daily, and in about one week water may be poured through the crocks several times a day. With this kind of treatment roots soon begin to grow, and potting is become necessary. For the proper growth of the plant, firy-peat, turf-loam, and sphagnum-moss, in about equal parts, should be mixed together, and made warm before use. A moist shady corner of the hottest house may then be provided for them, and throughout the season of growth abundance of water should be supplied. It is a native of Madagascar, and terrestrial.

Miscellaneous Orchids.—I give under this heading some genera and species, which under cultivation present many difficulties.—*Bollea costalis*, *Psephocaria curia*, P. Dayana, P. Klabechorom, P. Lehmanni, *Huntleya mel-agris*, H. Waitesiana, and *Batemanna Bartii*. The plants will in most cases soon begin to make growth, which in some cases will render attention being paid to re-potting. Pots or pans of a suitable size being chosen, they should be half-filled with drainage, and rough peat, sphagnum-moss, and a moderate quantity of half-decayed leaf-soil. In re-potting a plant, raise it high above the rim of the pot on a cone of the above materials, and this is a very important point in maintaining a plant in a healthy state. At this season, all of these plants may be kept in the coolest part of the East Indian-house, shading them carefully from sunshine, affording water overhead once or twice a day, and the roots likewise as often as may be necessary, and moisture should be freely afforded during growth. The young roots are apt to be gnawed by woodlice, and traps should be set for these insects, or much damage will be done. *Stenia (Chondrorhyncha) pallida*, S. Caestertonii, and *Zygopetalum grandiflorum* require a similar kind of treatment. *Habenaria rhodochila* is a plant that is now beginning to grow, and must have its tubers repotted forthwith. In doing this, turn them out of the pots, and probably more than one will be found in a pot. If an increase of the stock of this plant is required, repot each tuber singly. The pots should be of a suitable depth, furnished with several pieces of crock at the bottom, upon which the base of the tuber should rest, the top being immediately below the rim of the pot; and having placed a tuber properly, proceed to fill up around it with smaller crocks to within one inch of the top, surfacing with the following mixture—peat and loam in equal parts, finely-chopped sphagnum moss, a moderate quantity of finely-broken crocks and coarse silver-sand, just covering; the tuber so that its point may be observed

through the compost. For a few days after repotting no water will be required, and then an occasional sprinkling overhead with a fine rose watering-can will suffice to induce activity. When in full growth, an almost unlimited supply of water becomes necessary. This species of *Habenaria* is a native of China, and should not be grown in much warmth, or *Thrips* will soon play havoc with the leaves. A cool part of the intermediate-house is a suitable place for the plant at all times. The rare *Cymbidium Devonianum*, now commencing to push out its flower-spikes, will require close attention, to prevent these pushing down into the compost. The hybrid *Miltonia Bleuchana*, and its varieties *nobilior* and *virginialis*, now throwing up their spikes, should be closely examined, to ascertain if *Thrips* are infesting them; and if any are present, take means to destroy them forthwith, or a whole year's labour will be lost.

FRUITS UNDER GLASS.

By F. HAARIS, Gardener, Eastnor Castle, Leicestershire.

Pot-Vines.—Where Grapes are required at a very early date, pot-Vines become almost indispensable. If these were started with a view to obtaining ripe fruit at the end of March, or the beginning of April, the Vines should now be nearing the flowering stage, when they will require a higher temperature, a dryer atmosphere, and the bunches careful fertilisation. When the flowers are set, and the best bunches can be determined, remove the weaker ones, but leave from four to six bunches upon each Vine, according to its strength. As soon as the berries are large enough, they should be thinned, carefully removing small berries first; but early Grapes should not be thinned nearly so much as late ones. Afford the Vines a top-dressing of good loam, with a sprinkling of an efficient artificial fertiliser, and afford copious waterings with warm liquid-manure. If such helps to growth are neglected after the Grapes commence to swell, the result will not be satisfactory. Maintain the bottom-heat at 70° to 75° by the additions of warm leaves and stable-manure that have been prepared, and if some good loam be put on the top, and the roots exposed to the wind, the top of the pot will be still as will be conducive to a good finish in the Grapes. A moist growing temperature should be kept up by frequently damping down with liquid-manure during periods of hard firing, and especially at night.

Early Peach House.—If this house was started in November, the trees will now be passing out of flower, and may with safety be kept a little warmer. Afford the trees a moderate application of tepid water to encourage the fruit to commence swelling, and spray the trees with warm water at closing time upon warm sunny days. If the least sign of green fly should appear, destroy them by gently fumigation, but taking care that the smoke does not become hot; several mild applications being better than one severe one. I find it much safer to fumigate Peach-trees as soon as the fruit is quite set than afterwards, for when it has been necessary to fumigate in the later stages of growth, harm to the foliage has generally ensued. Do not dis-band too soon, as it tends to check growth too early in the year, but when absolutely necessary, dis-band very gradually by removing a few shoots each day from the more advanced branches. Careful attention to this detail, and in the matters of syringing, watering, and ventilating, will be likely to result in good, fully-developed fruit, and healthy foliage.

THE FLOWER GARDEN.

By CHARLES HERRIN, Gardener, Dropmore, Maidenhead.

Pelargoniums for Summer Bedding.—Owing to the fierce drought of the summer of last year, some varieties made so little growth that it was almost impossible to take cuttings; and where the stock is below the requirements, means should now be taken forthwith to propagate them. Assuming that the gardener has space in a warm house for the plants standing in pots and boxes, they may be potted-off singly, using for the purpose large 60's, and placed in the house, where, if subjected to a temperature of from 55° to 65°, they will soon establish themselves. In pottling-off bedding-plants of this sort, it is unnecessary to use any crocks in the pots, but to employ a little of the roughest sittings of leaf-soil instead. As soon as the plants have grown a few inches in height, shoots fit for cuttings will be obtainable, which, if taken off at a joint and inserted singly in small pots, or four into a large 60, will soon root if the pots are placed on shelves over the hot-water pipes, or in a bed of warm leaves in a vinery or forcing-pit. All

of the leaves should not be stripped off the cuttings, as if two or three are left, the cuttings will break the more freely, and sooner make bushy plants. If the leaf-stalks are much drawn, the better way is to take them off, leaving merely the terminal bud. Plants removed from the flower-beds in early autumn and potted may now be placed in heat to furnish cuttings. Where the stock of *Pelargoniums* is sufficient for future needs, the general pottling-off need not take place till towards the end of next month, at which time in most gardens there are more houses in which to place them. The pelatum or Ivy-leaved varieties are useful as dot-plants when 2 or 3 feet in height, and plants of these should be potted on as may be required, placing a stick to each, to which the shoots should be loosely tied as growth goes on.

Fuchsias.—Of late years the *Fuchsia* has deservedly taken, as at a former period was the case, an important place in the summer flower garden; and the plants which were struck in the autumn of 1896 (which wore, as I assume, potted early last month into 60's, and have been kept growing in a house furnished with a temperature of 50° to 60°, will now be well rooted and fit for shifting into larger, say 5-inch pots. The potting soil for the *Fuchsia* at this stage, should be moderately light and rich. After potting the plants stand them near the glass in a house with a temperature 5° higher day and night than that they previously occupied. Any plants that were potted up from the beds in the autumn, if cuttings are wanted, may be slightly pruned, and placed in gentle heat, the others being more severely pruned and kept cool for a time. *Fuchsia* cuttings, as soon as obtainable, will strike quickly in bottom-heat, then potted off; and when grown on quickly they make good plants by the end of the month of May. An excellent variety for summer-bedding is the old Madame Cornillon, very free in flowering, and of a pleasing colour, that is, with dark red sepals, and semi-double, white corolla. Lord Beaconsfield is another effective variety for this purpose, of tall growth, flowers large, singly, a self-coloured rosy-carmine. Empress of Germany is a dark double-coral-red, free-flowering variety, which is much used in Hyde Park. Ballet Girl, double-white, produces masses of bloom, and quickly makes a good pyramid. The well-known Mrs. Marshall is another good bedder. *F. gracilis variegata* is an excellent variety of slender growth, with variegated foliage; while *F. Meteor* is adapted for the edging of beds when pegged down, having leafage of a bright bronzy-red colour.

Evergreen Shrubs.—Among early-flowering evergreen shrubs, the *Androneda* take a prominent position. A *foribunda*, in a sheltered position, is just opening its first flowers. Being a fibrous-rooting plant, it may be moved at almost any time during the autumn or spring. A *japonica*, with larger flowers and longer racemes, blooms rather later, and is a desirable variety. *Andromeda*, or *Zenobia speciosa*, a partly deciduous summer-flowering variety, with handsome spikes of large Lily of the Valley-like flowers, is not so often seen in gardens, although it is a desirable plant, which continues in bloom for a considerable period. *Viburnum Tinus* (*Laurestinus*) is well known; and of other useful shrubs for planting may be named—*Berberis Darwinii* and *B. stenophylla*, *Olearia Hasseltii*, varieties of *Berthemya mucronata*, *Vaccinium oratum*, and *stans*; *Arbutus*, male and female; *Rhododendrons* in variety; *Kalmias*, and *Buddica globosa*, which although not perfectly hardy, survives ordinary winters, and is a handsome flowering shrub. *Crataegus Lelandi*, when well berried, forms a conspicuous object in the shrubbery borders, also *Arbutus Uuedo*, and *Andrachne*. *Hollies* in variety, with both gold and silver variegated forms.

THE SILVER WEDDING OF MR. AND MRS. T.

WHILLANS, Bleinheim Palace Gardens, was celebrated on Jan. 6, on which occasion his Grace the Duke of MARLBOROUGH sanctioned the use of the spacious corridors of the new south block of greenhouses (which were prettily decorated and illuminated) for the purpose of entertaining the many friends, including the principal domestics at the palace, who had assembled to honour the event. Mr. and Mrs. W. were the recipients of numerous tokens of friendship and kindly congratulation, amongst others a handsome silver cake-basket, given by the garden employes, which will, no doubt (as we trust for many years to come) be regarded as a most sincere expression of kindly sentiments.

EDITORIAL NOTICES.

ADVERTISEMENTS should be sent to the PUBLISHER.

Letters for Publication, as well as specimens and plants for naming, should be addressed to the EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be written on ONE SIDE ONLY OF THE PAPER, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith. The Editor does not undertake to pay for any contributions, or to return unused communications or illustrations, unless by special arrangement.

Illustrations.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, &c.; but he cannot be responsible for loss or injury.

Local News.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

Newspapers.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

APPOINTMENTS FOR THE ENSUING WEEK.

MEETINGS.

SATURDAY, JAN. 23.—Royal Botanic Society meet.
WEDNESDAY, JAN. 27.—Bedfordshire Gardeners' Society meet.

SALES.

MONDAY, JAN. 25.—Begonias, Gladioli, Tuberoses, Greenhouse Plants, &c., at Prothero & Morris' Rooms.
TUESDAY, JAN. 26.—9700 Reeses, Azaleas, Iris, Carnations, &c., at Prothero & Morris' Rooms. Japanese Lilies, Rhododendrons, Palms, Begonias, Palm Seeds, &c., at Prothero & Morris' Rooms.
WEDNESDAY, JAN. 27.—Begonias, English and French Roses, Border Plants, Shrubs, Fruit Trees, &c., at Stevens' Rooms.
THURSDAY, JAN. 28.—Roses, Paeonies, Gladioli, Clematis, &c., at Prothero & Morris' Rooms. Liliums, Hardy Perennials, Bulbs, Books, &c., at Stevens' Rooms. Azaleas, Hardy Bulbs, Liliums, &c., at Prothero & Morris' Rooms.
FRIDAY, JAN. 29.—Orchids, from Messrs. F. Sander & Co., at Prothero & Morris' Rooms.

AVERAGE TEMPERATURE for the ensuing week, deduced from Observations of Forty-three years, at Chiswick.—38° 6'.

ACTUAL TEMPERATURES: LONDON.—January 20: Max., 39°; Min., 32°.

PROVINCES.—January 20: Highest Temp., 46°, N. W. Ireland; Lowest, 31°.

AMONG the numerous proposals for adequately commemorating the "diamond Jubilee" of our QUEEN, we can, of course, only mention here those that have some direct connection with horticulture. Among these we may call attention to a scheme issued jointly by the Commons Preservation Society, the Kyrle Society, the Metropolitan Public Gardens Association, and the National Trust for Places of Historic Interest or Natural Beauty. Some years since we made inquiries into the provision made in our great towns to secure open spaces for sanitary purposes, as well as for recreation. The general result showed that London and most of our great towns were now well provided with commons, parks, or pleasure-grounds at a distance from their centres; but that there was, as there still is, a great necessity for numerous open spaces as large and as attractive as possible in the more crowded districts of our large towns. The incidence of disease and death is

disproportionate in such areas, to say nothing of the deficiency in the amenities of life. It is impossible, therefore, not to sympathise with the efforts that are being made to purify and beautify our great towns, and to add to the comfort and enjoyment of the citizens. A circular before us says:—

"Our idea is that a locality which is taking common action for the purpose, may fitly provide for itself a plot of ground, or place of natural beauty or historic interest, to be dedicated to the common use and enjoyment of its people. This may be called a 'Queen Victoria' garden, park, playground, memorial, field, or whatever name indicates its destined use.

We venture to suggest the following considerations in support of our idea:—

(a) In the metropolis, and in all populous and growing towns, the inadequate supply of open space is generally recognised. In view of our rapidly increasing urban populations, there are very few towns sufficiently provided in this respect, or in which it is not expedient to secure more parks or playgrounds.

(b) In rural districts there is a great deal of liberality shown by landowners in allowing the use of their ground. But that is all subject to changes of ownership and to calls for other uses. It is desirable for people to have places of their own which are secured to them in their own right. Where there are no greens or commons, the children of the poor have often only the lanes and roads as playgrounds. They may not ramble in woods and along hedges, and thus their high spirits, instead of fading vent in play and games, often result in mischief, and lead to serious trouble.

(c) Places dedicated to public recreation afford the largest social range of enjoyment. Not the poor only, but all classes; young, old, rich, poor, ailing, well, good and bad, can enjoy a common ground. That is very fitting for a National Memorial.

(d) Such a dedication is a form of donation that can do no harm to any one, for it cannot pauperise people or injure their self-dependence, as it is a boon they cannot possibly procure for themselves.

(e) Memorials in this shape also afford a greater chance of permanence in point of time. There are few institutions which do not become unsuitable by changes of habit and circumstances, whereas it is difficult to look forward to a time when an open space or some feature of natural beauty will not be a valued possession. This element of permanence also is very fitting for a National Memorial.

(f) The great difficulty found in permanent institutions is the amount of management they require, which, after the first interest of the founders has passed away, is not apt to be forthcoming, except through paid agencies, which are liable to become rigid and mechanical. Open spaces require less management, as they are hardly capable of diversion from their object, and the visible character of their condition, and the constant presence of those interested, are securities that defects in management will speedily be brought to the notice of their managers.

(g) The recent extension of Local Government affords new and great facilities for the ownership and management of endowments of a local nature, such as we have in view.

We will re-state in somewhat more expanded form the plan which is before our minds. We aim at connecting the memory of the Queen with something which will permanently make a neighbourhood more healthy, more agreeable, or more interesting to live in. The exact form which such a memorial would take might vary largely in different places. In near proximity to a common or heath, no memorial would be more fitting than to place such common or heath under local management, by means of a Provisional Order, made under the Commons Act, 1876; and the consent of the Lord of the Manor to such an order would be his gift in celebration of the Queen's reign. In places where there exists some hill-top commanding extensive views, some piece of woodland or of water, of beauty and

of value to the neighbourhood as a place of resort, some waterfall, some sea-cliff, or other place of natural beauty, the dedication of this to the public would be the best expression of the idea we wish to suggest. In other places, again, where no common lands remain, and there is no exceptional charm of scenery, the best memorial would be the provision and dedication to the public of a garden, park, or playground; and in other cases, perhaps, the definite dedication to the public of a valued but doubtful right of way, or the formation of a new road or foot-path affording an agreeable drive or walk in the surrounding country, or the planting of memorial trees in appropriate places. Again, in the Metropolis and other towns, there may be square gardens or disused burial grounds, or other lands, which have been hitherto, by some accident, saved from the builder, but which are doomed either to absorption into the surrounding areas of bricks and mortar, or to waste and neglect; to recover such spots, and place them under the management of the town authority, would be an invaluable memorial of the Sovereign's long and beneficial rule. Finally, there may be some earth-work or ruin of great interest, or even some building of rare architectural beauty or historic associations, which might be purchased and devoted to some public purpose, and which would form a possession of unique value for future generations. In one or other of these ways the amenities of the neighbourhood may be permanently enhanced, and a lasting memory of the Victorian reign preserved, in a form which would be a permanent source of pleasure and interest to the inhabitants.

Lord HOBHOUSE is chairman of the joint committees, and Messrs. BASIL HOLMES, 83, Lancaster Gate, London, W., and LAWRENCE W. CRUICK, 1, Great College Street, London, S.W., are hon. secretaries to the joint committees, to either of whom communications may be addressed. *December, 1896.*

ROYAL HORTICULTURAL SOCIETY.—It is proposed that NORMAN C. COOKSON, WILLIAM MARSHALL, and H. J. VEITCH, be elected members of the Council at the annual meeting on February 9, in place of Sir ALEXANDER ARBUTHNOT, GEORGE BUNYARD, and HENRY J. PEARSON.

THE VICTORIAN MEDAL.—In connection with the three concluding paragraphs of the Report of the council, which is now in the hands of the fellows (see p. 66), the following letters, kindly furnished by Rev. W. W. WILKS, may be of interest to our readers:—

"December 18, 1896.
"Sir,—I am desired by the Council of the Royal Horticultural Society to ask you to lay before Her Gracious Majesty the Queen, patron of the society, a proposal which they beg leave to bring before their fellows, for the establishment of a medal or medallion in celebration of the attainment by Her Majesty, in 1897, of the 60th year of her happy, prosperous, and beneficent reign. With Her Majesty's gracious permission and approval, the council wish to name their medal 'The Royal Horticultural Society's Victoria Medal,' and their proposal is that it should be awarded by the society. 'Honoris Causa,' to a certain number of persons distinguished for their services to horticulture, or eminent in the science and art of gardening. The council express a confident belief that no such distinction exists at present, and that the institution of such a 'Medal of Horticulture' would be received with marked favour by Her Majesty's garden-loving subjects. They therefore venture humbly to hope that their proposal may meet with Her Majesty's gracious consent and approval.

"I have the honour to be your obedient servant,
"TREVOR LAWRENCE,
"President."

Rt. Hon. SIR FLEETWOOD EDWARDS, K.C.B.

"Osborne, December 23, 1896.
"Sir,—In reply to your letter of the 18th inst., which I have laid before the Queen, I am commanded to express Her Majesty's regret that she can only refrain in this instance as in all similar cases, from giving any personal opinion with reference to any specific proposal for the commemoration of the 60th anniversary of the reign. At the same time, the Queen has no possible objection to raise to the establishment of the medal referred to, or to the name that it is proposed should be given to it—and they would appear to be points that rest with the council of the Royal Horticultural Society.

"I am, Dear Sir,
"Yours faithfully,
"(Signed) FLEETWOOD J. EDWARDS,
SIR TREVOR LAWRENCE, Bart.

BULBOPHYLLUM ERICSSONI, *Kranzlin*, n. sp.—
By the kindness of the Hon. WALTER ROTH-CHILD,
we are enabled to give an illustration (fig. 16) of this
remarkable species, which was imported a few years
ago by Messrs. F. SAYER & Co., St. Albans, through
their enterprising Swedish collector, Ericsson. It was
described from dried specimens sent by that collector

slender flower-stalk, and you will get an idea of
this extraordinary new *Bulbophyllum*. The flowers
have a yellowish-white ground colour, the sepals and
petals are heavily spotted with dark brown, the lip is
red, and has a very strange spongy texture at its
disc." Not only is the species remarkable for its
showy flowers, but its large shiny green leaves sur-

Wylan-on-Tyne, for his successful hybridisation of
Orchids, extending over many years, by which a large
number of new and beautiful forms have been added
to this remarkable family of plants.

To MARRIS R. SMITH, of Warren House, Hayes, an
eminent amateur, who has been most successful in
the raising of Carnations. By his efforts many new



FIG. 16.—*BULBOPHYLLUM ERICSSONI*.

to MESSRS. SANDER, by Dr. KRANZLIN, in the *Gardeners' Chronicle*, October 28, 1893, p. 522. The illustration represents a very fine and distinct new species; and a still stronger specimen, which is sending up two stout flower-spikes in the Hon. WALTER ROTH-CHILD'S collection, may probably quite come up to the words of Dr. KRANZLIN'S description:—"This is by far the most striking new Orchid received for some time past. Imagine a group of from nine to twelve flowers of a large Chimeroid *Masdevallia*, surmounting a

mounting its long and rather slender pseudo-bulbs, render it an ornamental plant when not in bloom. It is probably a native of New Guinea, and therefore a warm-house plant.

VEITCH MEMORIAL FUND.—The Veitch Memorial Trustees have decided to present, this year, a large Silver Medal for distinguished service to horticulture, to each of the following gentlemen:—
To NORMAN C. COOKSON, Esq., of Oakwood,

and beautiful varieties have been raised, especially in the Malmison section, and among those which, on account of their hardihood and beauty, are adapted for culture in the open border.

To Professor L. H. BAILEY, of Cornell University, Ithaca, N.Y., in recognition of his efforts, by means of his lectures and his writings, to place the cultivation of plants on a scientific basis; to promote the extension of horticultural education, and, by numerous trials and experiments, to improve and

render more productive, plants grown for economic purposes.

TO CHARLES NAUDIN, of Antibes, a distinguished French botanist and horticulturist, who, by his prolonged series of experiments and observations, has much advanced the theory and practice of hybridisation. M. NAUDIN has also been highly successful in introducing, cultivating, and distributing a large number of plants of great economic importance, and of thus enhancing the resources not only of his own, but of other countries.

TO HERR MAX LEICHLIN, of Baden-Baden, as one who has rendered eminent service to horticulture by the introduction of a large number of interesting plants, and who has displayed equal sagacity and skill in their cultivation.

The Trustees have also decided upon placing a medal and prize of £5 at the disposal of the Shropshire Horticultural Society, to be competed for at their Great Commemorative Exhibition in August next; and have allotted a similar Medal and prize of £5 to the Trencham Horticultural Society.

HORTICULTURAL CLUB.—The monthly dinner and conversation took place at the Hotel Windsor on Tuesday, 12th inst. The chair was taken by Mr. HARRY JAS. YETCH (Vice-chairman of the Club). The subject for discussion was "The Proposals for Horticultural Memorials of the Queen's Reign," which was opened by the secretary, Rev. H. H. D'OMBRAIN, who passed in review the various proposals which had been advanced in the gardening journals, and expressed his opinion, that not one of them was practicable, and that as far as a Horticultural Institute, of whatever character it might be, was concerned, there was no situation in London that could be considered eligible; that what was required was not so much a hall where large shows could be held as a home where such fortnightly meetings as those of the Royal Horticultural Society could be held, together with some suitable offices for committee meetings and horticultural gatherings, which must be held in a central position alike suitable for the provincial and the suburban exhibitors. A discussion took place, and the general opinion was that, with the air full of schemes for the popular celebration of the 60th year of the Queen's beneficent reign, the year 1897 was not a good time to launch a scheme for the national benefit of horticulture, more especially after Her Majesty had herself indicated that what would be most acceptable to her would be the strengthening of the nursing institutions, hospitals, and other works of mercy for the relief of the suffering and poverty-stricken masses of the people. Horticulturists would have a good opportunity presented to them of following this particular line in strengthening the new "Victorian Era Fund" about to be raised by the Gardeners' Royal Benevolent Institution, particulars of which appeared in our issue for the 16th inst.

AMERICAN FRUIT IN VIENNA.—Apples and Pears from the United States, Canada, &c., have been selling, as we learn from an Austrian contemporary, on the Vienna market, the first at from *5d.* to *8d.*, and the latter from *3d.* to *1s.* per kilogram. The quality is good, the exporters fully understanding that only good wares would sell at a profit. The fruit-growers of Great Britain are, therefore, not alone in experiencing the competition of the American in the home-markets. This may, this season, have been enhanced by the enormous fruit-crop of excellent quality harvested in America, accentuated by the smallness of the crops on the continent.

PRUNING THE WALNUT-TREE.—The pruning of the Walnut-tree should never be performed during a period of frost, nor yet after growth has begun, as that leads to bleeding, as in the Vine; but in the spring, just before growth recommences.

AGRICULTURAL EDUCATION IN ABERDEEN UNIVERSITY.—Since the changes were made in the teaching of agriculture in the Aberdeen University, those in charge have not allowed the grass to grow under their feet. A new popular class has been

started for those who have had little or no previous scientific training in the subject, by Mr. WILSON (Lecturer in Agriculture), Mr. HENDRICK (Agricultural Chemistry), and Mr. YOUNG (Veterinary Science), with great spirit, on their own responsibility; and the creditable efforts of these gentlemen to popularise the subject deserves every encouragement. The course lasts for a month, the classes being held daily (except Saturday), from 1.30 to 5 P.M.

DIMORPHIC CYPRIPEDIUM.—Messes. SANDER & Co. obligingly send us a curious sport, which derives additional interest from the legal proceedings which have lately taken place with reference to similar sports. The plant in question is *Cypripedium Dauthieri*. In some years, as we are informed, all the flowers are of the usual character, whilst in other years all the flowers produced are smaller in size, thinner in texture, pale in colour, indeed quite free from the rich violet colouring of the nerves of the dorsal sepal. This year the plant has produced one of those degenerate flowers at the same time as the normal blooms. The flowers have been on our table for several days, and it is curious to observe, as we write, how the typical flower preserves its brilliancy of colour and firmness of texture, in spite of the foggy atmosphere to which it has been subjected. The other flower is limp and wretched, its segments all depressed, and of the colour of a dirty rag. The stamens and stigma are, except in size and colour, similar in the two flowers. We do not hear that the foliage of the plant is subject to the same degeneration.

"ATLAS DES PLANTES DES JARDINS ET D'APPARTEMENTS." Par D. BOIS. Paris: KLINGESIECK. (Text, 432 pp. 8vo; 329 coloured plates.) This is a series of coloured plates, accompanied by a descriptive text, and devoted to a selection of the plants most frequently met with in cultivation by amateurs. It is therefore intended more particularly for those who are not professed gardeners. To them in particular, and to gardeners in general, we commend these volumes. The information given is no compilation, such as is commonly the case in horticultural literature of this class; but it is, within its limitations, an original book, indicating much research, observation, and judgment. Of the plates also we can speak in terms of high praise; they are accurate and faithful—not exaggerated, and containing details not often found in such works. The only defect we can point out is that the artist has occasionally selected for representation specimens of poor varieties that do not do justice to the plant; take, for instance, t. 290, representing *Lilium speciosum*. We fear the bulb-merchant would not secure many customers if the flowers produced from his bulbs were not of better quality than that represented in the plate in question. A like remark might be made of t. 248—*Lycaste Skiuceri*; and of the *Masdevallias* on plate 243.

HAMPTON COURT PALACE GARDENS.—We understand that Mr. A. GRAHAM, who has been superintendent of these gardens for a period of about twenty years, and who made effective use of carpet-beding there, has resigned; and is succeeded by Mr. GARDNER, superintendent of Greenwich Park Gardens.

MR. FRED TURNER, F.L.S., has recently been offered and has accepted the position of consulting botanist to the West Australian Government in succession to the late Baron F. von MUELLER. Mr. TURNER's work will principally consist in naming and describing the economic plants of the western colony. In the first instance, he will name and describe all the forage plants and grasses, so that the pastoralists and farmers who are settled there may know of what their pastures are composed, supposed poisonous plants, noxious weeds, &c. This work will be done in a similar way to that done by Mr. TURNER for the pastoralists and farmers of Queensland under instructions from the New South Wales Government. Mr. TURNER is the author of numerous illustrated and descriptive works, on "Australian Grasses," and other economic subjects. The work

in connection with the West Australian flora will not necessitate Mr. TURNER's leaving Sydney, so that pastoralists, farmers, nurserymen, and others who have been accustomed to send him botanical specimens to be identified and described can forward them as usual.

PINE-APPLE: ANALYSIS AND MANURE.—The October *Bulletin* of the Botanical Department, Jamaica, contains the following notes on the Pine-apple by Mr. J. J. BOWREY, F.S.C., F.L.C., Island Chemist—

ASH OF PINE-APPLE.	
Potash K ₂ O	49.41
Chloride of Potassium KCl	.88
Chloride of Sodium NaCl	17.91
Magnesia MgO	8.83
Lime CaO	14.15
Phosphoric Acid P ₂ O ₅	4.68
Sulphuric Acid H ₂ SO ₄	Trace
Silica SiO ₂	4.01
Phosphate of Peroxide of Iron	2.93
	99.29

Judging from this analysis of the ash of the Pine-apple, potash is the most important mineral substance which it requires. Of course phosphoric acid is also necessary, and so are lime, magnesia, and iron, but it must be a very rare soil which does not contain iron and magnesia in ample quantity, and usually there is enough lime also present. It is difficult to make suggestions respecting manuring in total ignorance of the nature of the soil to be manured. But certainly no harm can be done, and probably much good, by adding phosphoric acid and potash to the soil; the former best as finely ground basic slag or Thomas' phosphate powder, price about 55s. per ton, f. o. b., in England. A dressing of from 5 to 10 cwt. per acre will supply phosphoric acid for three or four years, and also some quantity of lime. The potash can, I think, be imported into Jamaica most cheaply as chloride of potash; its price is about £8 per ton, f. o. b., in England. From $\frac{1}{2}$ to 1 cwt. per acre would be a dressing for a year. But the Pine-apple also needs nitrogen for its growth; this might be supplied as nitrate of soda at £10 per ton,—giving one cwt. per acre when the plants have started to grow rapidly.

THE SURVEYORS' INSTITUTION.—The next Ordinary General Meeting will be held on Monday, January 25, 1897, when the adjourned discussion on the paper read by Mr. HOWARD MARTIN (Fellow), at the last meeting, entitled "The Future Development of the Surveyors' Institution," will be resumed. The chair to be taken at 8 o'clock. It has been found desirable to alter the date of the Annual Dinner from Wednesday, March 3 (the date given on the Calendar), to Wednesday, February 24. The dinner will take place at the Hotel Cecil.

THE WEATHER.—The character of the weather has greatly changed since our last issue, the temperature becoming much colder, with snowfalls in London and the southern parts of the country generally. From Salisbury and Cambridge we learn that frost of 11° severity was experienced on Sunday night.

THE ULSTER HORTICULTURAL SOCIETY.—An encouraging report was presented to the annual meeting of the Ulster Horticultural Society, which was held recently, Mr. JAS. JOHNSTON, J.P., presiding. This is one of the more flourishing of the Irish horticultural societies. The position of the Society is steadily improving, and its show (see fig. 17) held in November was much in advance of any previous one. Moreover, the weather being fine, the receipts were greater than on any previous occasion. The fine displays of *Chrysanthemums*, cut flowers, and fruit, are especially commented upon. At this show a new and interesting feature was the Veitch Memorial Prize competition for the best group of stove and greenhouse plants, which was worthily won by Mr. GRAY, jr. to J. B. HOUSTON, Esq. The receipts from all sources amounted during the year to £505 6s. 11d., as against an expenditure of £481 14s., leaving a total balance in hand of £54 18s. 5d. It was mentioned in the course of the meeting that the Society

would celebrate the diamond jubilee of the year by offering a prize of £100 for cut blooms, open to the whole United Kingdom. The prize will be named, "The Lady Mayoress Victoria Jubilee Championship Prize."

READING AND DISTRICT GARDENERS' MUTUAL IMPROVEMENT ASSOCIATION.—The annual general meeting of the Reading and District Gardeners' Mutual Improvement Association was held in the club room on Monday, January 11, Mr. T. NEVE, the chairman of the association, presiding over a large gathering of the members. After the report and balance sheet, which were of a very satisfactory character, had been read and adopted, the following members were elected to fill the various offices during the ensuing year:—President, Mr. C. B. STEVENS; chairman, Mr. T. NEVE; vice-chairman, Mr. E. DEARLOVE; librarian, Mr. JAS. MARTIN; assistant-librarian, Mr. E. DONEY; treasurer, Mr. W. PHIPPS; secretary, Mr. J. POUND, Junior. A very

standard on the upper white portion bears many purple markings; ornatum, the arrangement of spots on the standard in three different sizes had a curious effect. Other good varieties we have no space to mention. M. LINDEN sent also two varieties of *Cypripedium Lelaudyannum*, one remarkable for the good proportions of the flower. C. Lawrenceanum Moorebeckiense, from MM. L. LINDEN ET CIE., had a large and unusually dark standard; C. microchilum (from the same exhibitors), was very distinct-looking. M. MOENS showed C. Memoria Moensi and C. Laddensis. Phajus × Martine (P. Blumei × tuberosolosis), from M. A. VAN IMSHOOR, was remarkable for richness of colouring; Cattleya Trianei lucida, from M. LINDEN, is pure white with a lip, delicate yellow in the throat, purple at the base, and with a frilled white edge; Odontoglossum × flavo-marginatum, also from M. IMSHOOR, has all the divisions of the flower bordered with yellow; *Ocidiium Phalaenopsis punctatum*, the whole flower daintily speckled, is a gem; *Mesospidium*

which had been sown thickly, and also with plants raised from thinly-sown seeds; also showing rods a year old, from which fruit was cut at the end of December. The discourse was instructive, and the members present were invited to put questions to the lecturer, which many of them did. A number of plants in flower or berry were exhibited, chiefly *Prionias*, *Cyclamens*, and *Solanums*.

THE WOLVERHAMPTON FLORAL FETE for the present year has been fixed for July 13, 14, and 15. It will be held in the Public Park.

SCILLY.—According to the *Western Morning News*, the first special train of flowers from the Isles of Scilly for the season was despatched on Tuesday, 12th inst., from Penzance for the London, Midland, and Northern markets. The consignment consisted of about 1800 packages, weighing between 10 and 11 tons, and the train consisted of five vehicles. The Broccoli traffic from West Cornwall has also commenced in earnest last week, and on Monday three special trains were despatched. Up to the present very fair prices have been realised.

NEWCASTLE AND DISTRICT HORTICULTURAL MUTUAL IMPROVEMENT SOCIETY.—The monthly meeting of this society was held at their room, 25, Westgate Road, on Tuesday evening last. Mr. BULLOCK occupied the chair, and there was a good attendance of members. Mr. DAVIES, gr. at Thornhill Towers, Sunderland, read a paper on the "Odontoglossum," which was very much appreciated. An excellent discussion followed, in which many took part.

EFFECTS IN EXHIBITION.

THE art of arranging plants for exhibition purposes affords an excellent opportunity for the display of artistic taste, as well as originality of conception. In regard to the disposition of plants in groups, we have frequently expressed the opinion that the continental shows are much before the majority of our own. At York and Shrewsbury the grouping is always good; but the plants used in both cases are, for the most part, usually of a dwarf character, and the effect, though excellent in its kind, is not that which may be obtained with a free use of large, handsome Tree-Ferns, graceful specimen Palms, and other plants. At few of the exhibitions is landscape effect in a free, bold manner, attempted, and we therefore reproduce a photograph (fig. 17) that represents an exhibit by Mr. McKinnon, Curator of the Botanical Gardens, Belfast, at the Chrysanthemum show held by the Ulster Horticultural Society in November last. The exhibit is a successful imitation of a landscape scene, and includes a miniature lake, rockwork, a fountain, and glen effect. The background appears to be particularly appropriate, and the Tree-Fern, Palms, Dracenas, and Bamboos, are convenient in size and form.

We have been favoured with a photograph also from Mr. Thos. Paul, Hon. Sec., which represents a collection of stove and greenhouse plants exhibited at the same show by Mr. Thos. Gray, gr. to J. B. Houston, Esq., Orangefield, Belfast, an exhibit that was distinguished by an award of the Veitch Memorial Medal. Though the plants appear to be worthy of every commendation, the photograph itself is not so suggestive in character as the one we have reproduced.

PLANT NOTES.

A HYBRID CINERARIA.

THERE is flowering in the Botanical Gardens, Sheffield, a plant of *Cineraria*, distinct from any other with which I am acquainted, and which, judging from its appearance, will make a welcome greenhouse plant for flowering in the winter months. The plant commenced to flower in a cool house two months ago,



FIG. 17.—A GROUP OF PLANTS, ARRANGED BY MR. MCKINNON, AT THE EXHIBITION OF THE ULSTER HORTICULTURAL SOCIETY.

hearty vote of thanks was passed to the retiring president, Mr. ARTHUR W. SUTTON, for the great interest he had shown in the association during his term of office. A beautiful collection of *Prionia obconica* was shown by Mr. TOWNSEND, gr. to Sir WILLIAM FARRER, Sandhurst Lodge, and was greatly admired.

MEETING OF THE BRUSSELS ORCHIDÉENNE.

—Among other exhibits at the last meeting were thirty plants of *Cypripedium insigne* from MM. LUCIEN LINDEN ET CIE., of Moorebeck. These Orchids were all so fine, that to solve the difficulty of deciding which of them were the best the jury voted, with the result that the following varieties received awards:—*pictissatum (wanimille)*, the standard of which is spotted with purple on a white ground, and the form and colouring are exceptional; *fuscum*, standard all mahogany-brown, well set off by a wide white margin; *tigrinum*, very spreading standard, with large spots; *superbens*, a fine flower, the standard with a very wide white edge; *Canonberghi*, standard round, fresh green, with large spots and wide white margin; *illustre*, standard and lower sepal large, the latter with several lines of dots, the

vulcanicum maximum, with a raceme of seventeen beautiful flowers, won a Diploma of Honour à l'unanimité for M. LINDEN, and a First class Diploma of Honour was also awarded to him for *Mesospidium minutum*, in which the usual colouring of miltium was seen beautified with a shade of gold. *Cattleya Trianei eminetis* is of a delicate rosy tint; and a *Laelia autumnalis*, from M. VAN WAMBEKE, was exceptionally fine. M. LINDEN also sent *Odontoglossum crispum musicum*; *O. crispum arosium* (Diploma of Honour), *O. Hunnewallianum maximum*, *Cattleya × Lombaerdiana*, of a beautiful lilac-purple colouring, and very elegant (First-class Diploma of Honour), and other varieties. From the Royal Estates at Laeken came a fine plant of *Odontoglossum crispum*, a fine variety, with four racemes of blooms, two being of unusual length *Ch. de B.*

WINCHESTER GARDENERS' MUTUAL IMPROVEMENT ASSOCIATION.—On Tuesday the 12th inst. at a meeting of the above association, Mr. CURTIS, gr. to W. F. G. SPRANOE, Esq., Springhills, Southampton, read a paper on "Tomato Culture under Glass," illustrating his remarks with plants, the seeds of

and it is still in flower. The habit of the plant is shrubby, thereby differing from *C. cruenta* which is herbaceous, like the common garden *Cineraria*; the leaves are somewhat small, and not unlike those of *C. lanata*, although the stems and under-surface of the leaves are less white and woolly than is the case in that species. The flowers are about $1\frac{1}{2}$ inch in diameter, and the colour approaches magenta. It has the appearance of being a hybrid between *C. lanata* and *C. cruenta*, the character of both these species being well marked in the plant. Our attempt to raise it from seed has been unsuccessful, but it is easily propagated by means of cuttings put into a close frame in a cool house. *William Harrow, Jan. 1.*

INDIA.

WE have briefly to call attention to some remarkable publications lately issued from the Calcutta Botanic Garden, under the superintendence and largely under the authorship of Dr. King. They comprise three parts of the *Annals of the Royal Botanic Garden, Calcutta*, and when all the difficulties and drawbacks are considered, constitute, as we have said, some remarkable publications reflecting the greatest credit on the energy and capacity of authors and editor. The second part of the fifth volume contains a *Century of New and Rare Indian Plants*, described by Mr. P. Brihl, Dr. D. Prain, and Dr. George King. Mr. Brihl alludes to the necessity of studying the botany of the districts mentioned by Caspar Bauhin, Gouan, Gaertner, and others, of tracing the relation of the flora of the North-west Himalayas and the Caucasus, and of establishing the affinities between the flora of the Central and Eastern Himalayas and that of Japan. The botany of the extreme Eastern Himalayas is said to be all but unknown. "The results of the partial explorations of the Chunder valley, very clearly indicate the close relationship of the flora of the Himalayas east of Sikkim to the floras of Yunnan, Hupeh, Setchwan, and Kausu, point to a rich harvest, which is ready to be gathered in the inhospitable regions which stretch from the eastern frontier of Sikkim to the haunts of the Mishmis and Aoras."

The first part of the sixth volume contains a remarkable memoir, by Brigade-Surgeon Lieutenant-Colonel Cunningham, on the *Causes of the Fluctuations in the amount of Turpentine in the Motor Organs of Leaves*. The object of the author is to show that these movements are not due to irritability of the protoplasm, but to purely physical processes, dependent on osmosis, or on alterations in the relations existing between local supply and loss of water.

Details of a large number of experiments are given as well as coloured illustrations of the phenomena observed. An excellent index accompanies the memoir, which deserves and will obtain the careful consideration of physiological botanists.

The same author contributes an account of a disease affecting the leaves of *Ipomoea rubro-cœrulea* by a parasitic fungus, *Chaenophora Simsonii*, which is of special interest as showing a kind of starting-point from which various groups, both of the higher and and lower fungi, radiate. From a physiological and genealogical standpoint, this new fungus deserves the closest attention.

The seventh volume of the *Annals*, lately issued, contains a monograph of the *Bambusee of British India* by Mr. J. S. Gamble, the Director of the Imperial Forest School at Dum-Dum. It does not need a specialist to divine that this is a model monograph. In the introduction, details are given as to the literature of the subject, the morphological structure and geographical distribution of the species. These are distributed through—1, North West India; 2, Central India; 3, the Western Ghats; 4, Ceylon; 5, Bengal; 6, Burma; and 7, Malaya. One hundred and fifteen species are described, nearly twice as many as were known to Munro from the same countries. The absciss of the culms vary in different species, and supply good points of distinction in their texture, covering, and form. The sheath as here

understood includes the sheathing petiole, the abortive lamina, and the ligule. As to the nervation, Mr. Gamble quotes Kurz, who says little valve can be attached to the size, shape, and nervation of Bamboo leaves. Transverse veinlets, according to Mr. Gamble, occur only in the genera *Arundinaria* and *Phyllostachys*; in others, what appear to be transverse veinlets are not really such, but are caused by glands, which in fresh specimens are seen through the leaf as pellucid dots, and in dried specimens as raised lines, giving the appearance of cross-bars between two neighbouring intermediate veins.

The descriptive text, which is carefully drawn up and methodically arranged, is accompanied by 119 lithographic quarto plates, giving the floral and other details. Botanists and foresters have now at their disposal a monograph which will not only prove of scientific interest, but of great practical value. We venture to congratulate the author and authorities of the Calcutta Garden on this satisfactory production, and appreciate the wisdom of the Government in sanctioning its publication.

FORCING RHUBARB: CULTURE OF ROOTS.

As regards the forcing of Rhubarb, I do not intend to make many remarks, as almost every reader of the *Gardeners' Chronicle* knows how to do that. But there are differences in the produce from the varieties each will afford, and some are early, others late, in striking; the position the roots occupy when growing has also an influence on the plants. It is surprising how soon plants fit for forcing can be obtained from seed, but these cannot be relied upon as being true to name, with the consequence that some are late and some early. These should be marked with labels, so that in taking up roots for forcing only the early-growing varieties are dug up. It seed be sown early in the spring in rich soil in rows 2 to 3 feet apart, the seedlings may be thinned in the row to half that distance; and as some of the plants will take the lead, I carefully lift the stragglers, and transplant them, and though they may the following season lack the size of other roots they are earlier in starting, and therefore of value where large quantities of stalks are required. The forwardest of the seedlings the next season will be found to be much earlier than one would suppose would be the case in plants from one and the same sowing. These plants lift well as early in the winter as may be required, and soon turn in. Another important detail in Rhubarb for forcing, whether of seedlings or otherwise, is not to weaken the growth by pulling much of the growth during the summer, as, although the plants soon appear to recover from the mutilation, with seedlings every encouragement should be given the plant to make strong crowns, and to this end all leaf-growth should be left untouched. My remarks are not meant to apply to roots of large size, with many crowns or buds that are not intended for forcing.

Sowing seed, and growing on the plants solely or in great part for forcing, is not the only method practised, although I would strongly recommend it. Division of the root, when properly carried out, and good attention is paid to cultural details, answers well enough. Divisions of the root take at the least two years before fair-sized crowns form if no extra attention be given them, and the stalks are drawn for use. This is a point which gardeners often overlook, hence I lay more stress upon the necessity of good summer culture. I do not prefer seedlings to roots obtained by division, but when special culture is pursued with Rhubarb from seeds the results are better. Rhubarb requires deeply-trenched soil, plenty of manure, and the plants when growing are the better for occasional doses of liquid manure; but overcrowding must be guarded against by wide planting.

For some years my method was to plant a small quarter of Rhubarb yearly for forcing purposes, till I was induced to try seed, splitting up the roots in the usual manner, and affording the above methods of cul-

ture, but the roots were seldom strong enough in one year for the forcing-house, although a few might be. I found seed gave much better plants, and they took very little more time. When making a new plantation with divided roots, only the younger buds or crowns near the outside should be made use of, all decayed parts being rejected. If a few roots only are required, select some of the strongest side buds, and plant a piece of land yearly. Rhubarb is frequently planted in odd corners, but it is better to give it an open position, say single lines here and there, and treat it liberally, as if neglected, the plant soon deteriorates. If the plant must be grown on shallow soils, special care should be taken by preparing broad trenches as for Celery, throwing out and wheeling away the gravelly, sandy, or chalky subsoil as the case may be, and substituting better soil incorporated with manure. Much water in dry weather will be required by the plants in such soils, and this is a matter which must not be neglected; nor rich mulching. The crowns also benefit by a little cover being placed over them in severe weather.

A few words as to varieties. To bear hard forcing, no variety is better than the Royal Albert, or as it is better known, Early Red, a favourite market Rhubarb on account of the size of the stalks. For many years Johnston St. Martin's was our earliest variety, and I do not think it is yet beaten for earliness, but in poor soils, it is not large, although of good colour. Many gardeners fore the less well-known Hawke's Champagne, a grand variety as regards quality and productiveness, but not so early as Royal Albert; still, it is one of the best for preserving, and to follow the others named. There are other Rhubarbs, but not being good forcers, or being paler in colour when forced, or for other reasons, I do not mention them. *G. Wythes.*

HOME CORRESPONDENCE.

THE PEACH OUT-OF-DOORS.—Mr. Mayne, gardener, Bicton, Devon, writing under the above heading, p. 275 of the last volume of *Gardeners' Chronicle*, desires information with regard to the traicig of trees on walls with nails and shreds, and wire and ties. If Mr. Mayne were to refer to his *Gardeners' Chronicle* for October 30, 1895, he would see a note of mine on Peach and Nectarine trees, two of each, trained to wires—galvanised iron wires—which had received two or three coats of stone-coloured paint. These wires are fixed horizontally at 6 inches apart, being passed through galvanised iron eyes (which were also painted), standing about 1 inch from the wall, and to these the branches and shoots were tied with bast in fan form, the walls being about 12 feet high. The article in question will show that the trees and the crops which they annually bore were everything that could be desired, and had I not thought of severing my connection with Longford twelve or eighteen months earlier, I should have wired the other Peach walls, so satisfactory were the results secured from the trees in question; although, for that matter, all the Peach trees out-of-doors, as well as indoors, grew well, and bore heavy crops of fine fruit annually under the treatment which they were subjected to. But the fruits obtained from the trees trained to wires were unusually free from insect disfigurement, owing to the fact of their not being close to the wall, and from the crevices of which woodlice and other troublesome creatures prey upon the side of fruit next the wall without being seen until the fruits are gathered. However, to any reader of the *Gardeners' Chronicle* who may contemplate wiring a Peach-wall, I would say if the wall should be an old one, "first wash it with liquid-lime, into which a few handfuls of fresh soil has been stirred, dabbing this well into the crevices with the whitewash-brush in doing the work, and then point the joints with good mortar." I cannot see any reason why good crops of Peaches and Nectarines cannot be secured from trees occupying walls having a south, west, and even east aspect in all the southern and western counties in England, Ireland, and Wales, and in the south and west of Scotland under proper cultivation. *H. W. Ward, Lime House, Rayleigh, Essex.*

In reply to James Mayne's enquiry in a recent issue of the *Gardeners' Chronicle*, on the sub-

ject of nailing and wiring walls, I may state that here on the walls of the East Riding, of Yorkshire, Peaches grow and fruit admirably on walls that were built and wired for these trees and for Pears, &c., twenty-four years ago. The wire is of iron galvanised, and is placed perpendicularly at 6 inches apart. I have not observed any bad results from use of this kind of wire. The trees are easily fastened to the wires, and the saving of labour compared with nailing is considerable. The walls are in condition, without nail-holes, to harbour earwigs, wood-lice, &c.; the wires are placed close to the face of the wall, the branches and shoots being tied to the wires with soft string. The east-facing sides of the walls are well covered with wire having small heads, and are driven in close. With wire running vertically, it is easy to train a tree in any fashion. For training Morello Cherry trees, wires are very satisfactory. The lengths of wire being short, it is an easy matter to replace one when broken, or become rusted through, which is not often the case, if a wall is provided with a good coping to keep the face of the wall dry; when strong shoots press tightly on the wires we insert a cloth shred or bit of canvas between the shoot and the wire. We usually use the same crops of Peaches, with no more protection afforded them when in flower than a double thickness of fishing-net. *Bailey Woods, Birtall, York.*

CEDRUS DEODARA AND C. ATLANTICA.—More than sufficient has appeared in recent numbers of the *Gardeners' Chronicle* to show that in favourable spots the Indian Cedar, *Cedrus Deodara*, grows and thrives well, and forms a beautiful tree in this country; while ample proof has been given, if it was needed, that this valuable timber tree in Northern India is now likely to become a profitable one to plant extensively for timber in the British Isles. Its timber, so far as it has been fairly tested, is neither better nor worse than that of the Cedar of Lebanon, of which home-grown and fully-matured timber has long been available for experiment. The timber of the Deodar may improve as the trees reach maturity; but no sign of any improvement has yet appeared in the timber of the oldest trees grown in this country, and tested. It was introduced in 1831, and therefore the oldest timber experimented upon has not been the produce of a "ripe" tree. On p. 50 of the last week's *Gardeners' Chronicle*, Mr. Divers gives some very interesting remarks about the Mount Atlas Cedar, *Cedrus atlantica*, at Belvoir Castle, in which he expresses his opinion that C. Libani and C. atlantica are identical, botanically. In that opinion most authorities now agree, and include the Deodara in addition—looking upon the three trees as geographical varieties of one species, although, for garden purposes it may be better for a while yet to treat them as species, each having two or more varieties. The most interesting point, however, in Mr. Divers' remarks is, where he mentions a *Cedrus atlantica* cut down in 1894, with "a girth of 8 feet 6 inches at 3 feet from the surface, a good record for ninety-six years growth," and adds, "there are many trees of it here of a similar size;" and presumably of the same age? It is recorded by our best authorities that *Cedrus atlantica* only reached Europe in 1841, and it would be of special value to clearing up the history of the tree in England if the origin and date of introduction of the "many trees" of it growing at Belvoir Castle could be clearly explained and substantiated as occurring in the end of the last century? Tradition has it that a tree of C. atlantica was planted at Biel, in East Lothian, in the year 1707. Is there any record extant to prove this? Specimens with cones from Belvoir and Biel might be sent to the editor of the *Gardeners' Chronicle* for identification; and the history, as far as it can be given on good authority, of the trees at both places would be interesting reading. D.

RORIDULA GORGONIAS.—This remarkable Cape insectivorous plant is now flowering here for probably the first time under cultivation. The plants were raised from seed received from Kew two years ago, and are now of different heights up to 1 foot in the largest specimen. This species resembles greatly *R. dentata*, and is of an erect growth, with alternate linear leaves, bearing what appear to be two sets of tentacles, long and short, tipped with glands, the former possibly adapted for digesting, as in *R. dentata*. Although a near ally of the *Droseras*, it differs in the tentacles exhibiting no movement, and thus more nearly re-embles the genus *Drosophyllum*. The terminal inflorescence here carries six flowers, about half an inch in diameter. The petals are white, and around the style are arranged the anthers, which are

brown, with yellowish uppermost tips; the yellow stigma being raised a little above the anthers. Like the *Droseras*, the flowers are short lived. This genus has always excited considerable interest in these gardens, where specimens of *R. dentata* were for several years to be seen, some of which were more than 5 feet in height. The illustration in the *Gardeners' Chronicle* for September 26, 1891, on one presented to Kew, well portrays the habit of these remarkable plants. Unluckily, these fine plants never flowered, and the species is, I believe, not now in existence. The cultivation of the genus does not seem difficult when the right position is found for them, which, according to experiments made here, is a fairly moist atmosphere in a temperature a little below that kept up in our tropical stoves. The plants are by no means vigorous in rooting, and a sandy peat is the compost we use for them. *R. L. Harrow, Royal Botanic Gardens, Edinburgh.*

A CLUSTER OF APPLES.—With regard to the cluster of Apples figured on p. 27 of a recent issue of the *Gardeners' Chronicle*, Prof. Bailey, in his new work, *The Survival of the Unfit*, alludes to the prevalence of a dissociation of sexes in cultivated Apple trees; and that while Apple blossoms appear in clusters of five to ten, yet rarely are more than one or two developed into Apples, although with Crabs it is often the case. This loss of progeny in orchard Apples is due to the greater vigour of the one which withdraws the nourishment to itself at the expense of the others; but the question is, why should it do so, as it is not the case with the wild tree? Mr. Bailey says:—"I am inclined to think that these extra flowers serve a very useful purpose in supplying pollen to those which chance to set, for not only is the supply of pollen in the individual flowers probably becoming less with the improvement of the Apple, but it is also probable that more is needed to incite the enormous increase in size over that of the inferior aboriginal Apple (*Op. Cit.*, p. 372). Now this is due to the great tendency to separate the sexes in some cultivated fruit trees. This, therefore, probably accounts for the fact of one blossom which is "more female" in character developing a fruit, while the others are "more male," and so tend to fall without setting at all, or if they do, such fruits fall prematurely. The rationale, therefore appears to be, that high cultivation favours the development of the female organ—just as Mr. Meehan has shown, that in insectivorous trees the female flowers are on the stronger shoots—with an accompanying suppression of the female organ in the other flowers, which the sap does not do so directly. Hence, there results more or less degrees of infertility of particular varieties with their own pollen. It is a mistake, therefore, to plant large areas with one variety only, if such appears to be at all self-fertile. "Mixed orchards," writes Mr. Bailey, "are, as a rule, the most successful ones." With regard to the cluster of Apples from the north of Ireland, such would consequently seem to indicate a tendency to return to the conditions which obtain among wild Crabs. *George Henslow.*

WOOD-ASHES AS A MANURE.—The value of wood-ashes is not so well understood as it should be by the gardener. Some of them admit that under certain circumstances wood-ashes are useful as a manure; but it would puzzle them to afford a reason for their belief. Mr. Willis' note on the subject in a recent issue of the *Gardeners' Chronicle* contains some facts especially useful to the gardener. No finer dressing can be afforded the soil of a garden, and, especially in the winter, are easily worked, and which wet weather does not render unworkable for great lengths of time. I can remember that in the garden where I served my apprenticeship we used to keep a smouldering heap in an out-of-the-way corner pretty nearly the whole year round, and the ashes from this heap were sifted from time to time, and used for top-dressing the lawns. Since then I have found out that wood-ashes can be used with advantage for various purposes, but the sifted product of the smother-heap should not be left exposed to the weather. Ornamental foliage stove plants are especially benefited by wood-ashes being mixed in the potting-compost, so material that I have used giving them a better colour to the foliage. I have grown Crotons, *Dracaenas*, *Palms*, *Marantas*, &c., with and without wood-ashes, and the contrast between these which received wood-ashes and those which did not was almost incredible. *Eucharis* grow luxuriantly if wood-ashes be mixed with the potting compost; *Chrysanthemums*, *Roses*, *Carnations*, and *Tomatoes*, are especially benefited by frequent top-

dressings of wood-ashes. Most gardeners know the value of wood-ashes when applied to many sorts of root-crops, and no better manure can be given to a field of Potatoes. I am of opinion that where wood-ashes are applied to an open soil, farm-yard manure must also be liberally applied. One benefit derived from wood-ashes when mixed with potting mixtures is the length of time during which the soil remains sweet; and it towards the end of the growing period a little of the surface-soil be removed, and a sprinkling of wood-ashes, together with a suitable soil afforded the plant, the vigour of the plants will remain unchanged for a considerable length of time. *T. H. Smith, South Tottenham.*

PRIMULA OBOCNICA.—In addition to the value attaching to this plant for blooming so freely under glass at this season of the year, must be added that of the blossoms standing well in a hot state, with the addition that the partly-expanded buds will open out when the flower-stems are in water. It is as free of blossom as a double white *Primula sinensis*, and like it, it is successional as well; and the flower-stems being long, they are well adapted for home decoration in various ways. So far but comparatively little variation has appeared among seedlings. The blossoms of some are larger, rounder, and stouter than others, and there is a tendency to deepen the tints of some individuals to something approaching mauve. Supposed crosses with *P. sinensis* are doubtful, and perhaps it would be better to use *P. Sieboldii*; at any rate, the experiment is worth making. *R. D.*

VIOLAS AS BEDDING PLANTS.—The chief value of the *Viola* lies in its adaptability as a bedding plant. It is also exhibited in sprays, but that is a mere incident in its development, and the practice can scarcely endure for long, and one main reason is that it has led to a number of varieties being put into cultivation because they are exhibition sorts, and quite apart from their usefulness in the flower garden. Orders have been given for varieties seen exhibited as sprays only to be found of loose tall growth, irregular in habit, spare of bloom, and disappointing of the large number of varieties now in cultivation but few are destined to be permanently grown; and of these latter sorts over ten years old still hold the field. The Royal Horticultural Society is wisely arranging a trial at Chiswick next year, as a test of adaptability for flower garden work; it is to be hoped the committee of inspection will select only those of dwarf compact habit, free and persistent in bloom, producing symmetrical rather than irregular and uneven heads of bloom; and insisting upon stout well-formed flowers of distinct colours or harmonious combinations. If they will do this they will prove benefactors to the horticultural community. When it was stated by one of the leading officials of the National *Viola* Society that the use of the *Viola* as a spring bedding plant is a barbarous practice, it was felt that the society was practically condemning one of the most useful means to which the *Viola* can be put. There is urgent need for a group of *Violas* of hardy character, that standing the rigours of our English winters, will bloom with the *Hyacinth* and the *Tulip*. There are a few varieties which may be termed precocious bloomers, such as *Arlwell Gem*, *Bullion*, *Sylkark*, *Blue Cloud*, and *Lemon Queen*; and to these may be added *Sweet Lavender*, one of the earliest to flower on two-year-old plants. This group needs additions of yet greater precocity. Earliness of bloom is the great desideratum, and the *Viola* needs to be subjected to such a course of training as the late Mr. William Ingham used to carry out with his *Antirrhinums*, *Wallflowers*, *Primroses*, and other subjects at Belvoir. His favourite phrase was that he educated his plants—meaning that he selected his seed-parents because of unusual precocity in flowering, and in this way he obtained subjects to bloom in February which had hitherto not flowered until March. Some such process is needed with the *Viola*. As a rule, two-year-old plants will be found to bloom earlier than young ones. While unwilling to appear dogmatic, I think that plants obtained from division bloom earlier than those obtained from cuttings. Therefore I would pull the plants to pieces in September or October, and plant them out in nursery beds, and allow them to remain there one year, and then employ them for carpeting beds of bulbs to flower in the spring. Such plants would in a year make dense tufts; they would furnish the surface at once, and during mild intervals during the winter would blossom, and as soon as the weather became spring-like, proceed to flower beautifully; or, plants may be raised from cuttings in July, planted out in nursery-beds as soon as rooted, and then employed

for carpeting beds in October. They would bloom fairly early in spring, and with an occasional top-dressing or two with rich soil, bloom all through the summer. Precocity may be furthered by selecting the earliest bloomers among the seedlings. It is usual to sow seeds in trays and if this be done in boxes, the seedlings need to be pricked off into other boxes as soon as large enough, or into a prepared bed in a cold frame, and planted out in showery weather in July; while something would probably depend upon the size and vigour of the plants. Such varieties which are among the earliest to bloom, if other desirable qualities are present, may be selected as evidencing precocity, and eventually prove useful in the spring garden. Any substantial additions which can be made to the select list of early-flowering Violas will be gladly welcomed by those who are leading the movement in favour of a revival of spring bedding. *R. D.*

CUPRESSUS MACROCARPA.—The correspondent of the *Gardeners' Chronicle*, "Experience," now contributing a valuable series of articles on the propagation of plants, and on methods of transplantation, brought to my mind, in his allusion to a recent issue of the *Gardeners' Chronicle*, the make large top-girth and relatively few roots, a remarkable case in point, which could have been seen in the gardens of Howick Hall, Alnwick, some few years ago, and which may, for all that I know to the contrary, still be seen there. A small, pot-grown specimen of *C. macrocarpa* was planted in the soil of the old flower-garden in the year 1856, which grew at a great rate in the deep virgin soil resting on whinstone, making 2 to 3 feet of leaver in a year, and becoming proportionately bulky—indeed, it soon became a handsome tree, although many thought rather inappropriately situated, as it turned out in front of a range of glasshouses. Its over-turn was constantly predicted by those who remarked its great bulk and apparently fragile root-hold of the soil. These predictions, so far as I know of, were not verified, its tap-roots having passed through the soil into the fissures of the whinstone, anchoring the tree most securely. In shallow soils, unless these should chance to overlie chalk, which is a substance abounding in fissures, and which many species of Conifers succeed in admirably, the tree is sure to get blown over when large, unless protected from the more boisterous quarters. If this paragraph should meet the eye of Mr. Inglis, he would perhaps tell us if this specimen of *C. macrocarpa*, planted by Mr. Moore, is still in existence at Howick. *F. M.*

SOCIETIES.

ROYAL HORTICULTURAL Scientific Committee.

JANUARY 13.—Present: Mr. Michael (in the chair); Mr. Lynch, Rev. W. Wilks, Dr. Russell, Dr. Bonavia, Mr. Douglas, and Rev. G. Henslow (Hon. Sec.).

Fumago Diezlii.—It was reported from Kew that the specimens exhibited at the last meeting were too much decayed to be able to ascertain what fungus, if any, had caused the disease.

Senecio multiflorus Hybridus.—Mr. Lynch exhibited a number of specimens which he had raised by crossing *S. multiflorus* with various sorts of the parent *Senecio*. One or two of the colours much resembled those of the latter plant, the foliage being intermediate, and the height about 3 feet. All but one had *S. multiflorus* as the female parent, the results showing therefore great prepotency on the part of the male (*Senecio*). *S. multiflorus* was first introduced from the Canaries in 1855 (*Bot. Mag.*, tab. 4094, *Doronicum Bourgei*). It was subsequently lost from Kew, and reintroduced to Cambridge by Mr. Gardiner in 1855. Some of the flowers showed a peculiar circular white spot on the red tip of the petals (*Gardeners' Chronicle*, Jan. 16, 1857).

Cacarea cruenta.—Mr. Douglas said that he is raising seedlings of this plant, in order to see if it varies towards the cultivated forms without being crossed. Mr. Lynch observed that *C. Tussilaginis* was a species which apparently most nearly resembled the cultivated *Cacarea*.

White Narcissus, officinally Coloured.—Dr. Russell exhibited some cut flowers of white *Polyanthus Narcissus*, which he had placed in solutions of acid red magenta (Judson) dye, and in acid green. The colours had traversed the fibro-vascular cords, and then spread over the intermediate tissues, forming a border round the ends of the petals. He proposes investigating the matter to try and discover the general nature of these colours which will act in this way. It took from twelve to fifteen hours to infuse the perianths. Mr. Henslow remarked that John Lawrence in his book on gardening (1726), said that people in his day used to colour flowers by letting the roots lie in a solution of the lees of claret.

The Annual Report

has been issued in anticipation of the annual meeting on February 9. The Council are glad to be able to report the conclusion of a full and satisfactory year's work.

Financially, the balance in hand is not as large as it was last year, but this is more than accounted for by the extraordinary expenditure which the Council felt able to undertake at Chiswick, the whole of which has been defrayed out of income. The conservatory at the entrance to the gardens, which had for so many years required repair, has been entirely removed, and replaced by a building in every respect worthy of the Society; and the two old greenhouses, Nos. 1 and 2, which had been an eyesore to the gardens by reason of their ruinous condition for almost a generation, have been remodelled and rebuilt. The total of this extraordinary expenditure is over £500.

Under the head of ordinary expenditure at Chiswick, £1870 has been spent on the general work and repairs and keeping up of the gardens. Amongst other work, House No. 17 has been practically rebuilt, Nos. 15 and 6 have been very thoroughly repaired; the young men's bothies have also been put in good order and made more comfortable. The receipts by sale of surplus produce amount to £744, making the net ordinary cost of the gardens £1536.

The Council have every reason to congratulate themselves and the Society upon the selection which they made to fill the office of Garden Superintendent.

At Westminster, sixteen Fruit and Floral Meetings have been held in the Drill Hall, James Street, Victoria Street, and six Committee Meetings have been held at Chiswick, besides the larger Shows in the Temple Gardens, on May 19, 20 and 21; and at the Crystal Palace on October 1, 2 and 3. Lectures have been delivered at fifteen of the Meetings, exclusive of those given at the Crystal Palace. The number of awards granted by the Council, on the recommendation of the various Committees, has been as follows:—

AWARD.	On the Recommendations of the Committees.						Total.
	All Provincial Shows.	Subsidiary Committee.	Floral Committee.	Orchid Committee.	Orchid Committee.	Orchid Committee.	
Gold Medal	1	1	3	1	1	6	
Silver-gilt Flora	5	17	1	1	1	24	
Silver-gilt Knightian	2	9				11	
Silver-gilt Banksian	1	1	10	1	1	13	
Silver Flora	13	68	34			115	
Silver Knightian	2	16	18			18	
Silver Banksian	8	22	78	45	1	152	
Bronze Flora		4	7			7	
Bronze Knightian		4				4	
Bronze Banksian		5	26	5		36	
First Class Certificate	4	8	36	36		84	
Award of Merit	17	23	210	100	2	352	
Botanical Certificate	1	1	2	47		51	
Cultural Commendation	8	13	6	35		62	
Highly Commended	10					10	
Commended	3					3	
Total	75	102	463	303	4	948	

The Council must again express their opinion that there still appears to be a tendency to multiply unduly the awards recommended, and they earnestly request the several Committees to consider seriously whether there is not a real danger of impairing the value of these distinctions by such increase of their number; and whether it would not be possible, as well as politic, to be somewhat less generous in the recommendation of awards during the ensuing year. This is a question which the Council cannot but regard with solicitude, and they hope that every Member of the Committee will consider that he has a real and individual responsibility for the welfare of the Society in this matter.

The work of the Committees has of late increased so considerably that the delay of communication between the Council and the Committees has on several occasions caused great inconvenience. The Council, therefore, think it well to revert to an old rule of the Society, that the Chairmen of the principal Committees shall in future be chosen from among the Members of Council.

At the unanimous request of the Orchid Committee, and on certain members of it unwilling to pay a third of the expenses, the Council have arranged to have paintings made of all the flowers certified by this Committee. Exhibitors must, therefore, distinctly understand, that in submitting their flowers in future to the Committee, they thereby tacitly consent to their being painted, should they obtain any award, and they must hold themselves ready to give any reasonable facility to the Society's artist to do so. The Orchid Committee desire to have these paintings as an accurate record of the characters and peculiarities of the plants to which awards are made, finding it practically impossible for their members to bear in mind the details of numerous awards which have been seen but once.

The Council desire to draw the attention of all Fellows of

the Society to the more extended use which the Scientific Committee might be to them if they availed themselves more freely of their privileges in submitting instances of diseases of or injuries to plants, caused by insects or otherwise. The Scientific Committee is composed of gentlemen qualified to give the best advice on all such subjects, either in respect to the prevention or cure of disease. The Committee is also glad to receive specimens of malformation or other subjects of Horticultural or Botanical interest.

The Council wish to express their thanks to the Director of the Royal Gardens, Kew, for allowing them to consult Mr. Masson, F.R.S., on the subject of the *Senecio*, &c., on which before the Scientific Committee; and to the Chairman of the same for his readiness in giving them the advantage of his knowledge and advice.

The Society's Great Show held (by the continued kindness of the Treasurer and Donors) in the Inner Temple Gardens, was as successful as ever, and it is a matter of satisfaction to the Council to find that this Meeting is now universally acknowledged to be the leading Horticultural gathering of this country. The best thanks of the Society are due to all who kindly brought their plants for exhibition, or otherwise contributed to the success of this Show.

The Exhibition of British Garden Fruit held by the Society at the Crystal Palace, on October 1, 2, and 3, was, considering the season, eminently satisfactory. Full particulars will be found in Vol. XX., Part 2, of the *Journal*, issued in December.

As an object lesson in British Fruit cultivation this Annual Show stands unexcelled, and is of national importance. The Council invite Fellows and other friends to support it, for it cannot be too widely known that the continuance of the Show year by year is absolutely dependent on at least £100 being raised by subscription each year towards the Prize Fund. The Show involves the Council in a very large expenditure without the possibility of any return. They have therefore established the rule that they will not continue it unless sufficient interest in it is taken by Fellows and their friends to raise £100 towards the Prize Fund. Subscriptions for this purpose should be sent at once to the Secretary, 117, Victoria Street, Westminster, and if the list prove satisfactory the Secretary will be glad to accept of the Show held on September 30 and October 1 and 2, 1897. The list of subscribers for 1896 will be found on page 129 of Vol. XX., Part 2, of the Society's *Journal*.

Deputations were sent by the Council at the invitation of the local authorities to attend the great horticultural gatherings at York in June, and at Chester in August, 1896. Full particulars of these visits will be found in the Society's *Journal*, Vol. XX., Part 1, p. 27, and Vol. XX., Part 2, p. 130. The Council cannot, however, refrain from taking this opportunity of congratulating York and Chester on the admirable displays of Horticultural skill and enterprise made at their respective fêtes and gais, and of recording the very great pleasure which these visits gave them, and their appreciation of the great courtesy and hospitality with which they were received in both cities.

The *Journal* of the Society has been continued so as to enable Fellows at a distance to enter more fully into and reap the benefits of the study and work of those actively engaged at headquarters. Vol. XIX., Part 3, and Parts 1 and 2 of Vol. XX., were issued during the year, and Vol. XX., Part 3, is now almost ready for issue.

In January, 1893, the Council published a list of all the Plants, Flowers, Fruits, and Vegetables certificated from the year 1859 to 1892. A Supplement is now ready, bringing the list down to December, 1896. Each part is issued at the price of One Shilling, but the two together may be obtained for Eighteenpence, at the Society's Office.

An examination in the principles and practice of Horticulture was held on May 1, concurrently in different parts of the United Kingdom, a centre being established wherever a magistrate, clergyman, or schoolmaster, or other responsible person accustomed to examinations would consent to act as an examiner. The Council acted in accordance with the rules laid down for its conduct. No limit as to the age, position, or previous training of the candidates was imposed, and the examination was open to both sexes. 153 candidates presented themselves for examination. The names and addresses of those who succeeded in satisfying the examiners, together with the number of usks assigned to each, will be found in the Society's *Journal*, Vol. XX., Part 1, 1896, page 58.

It is proposed to hold a similar examination in 1897, but at the request of those most nearly concerned, the date has been altered to the beginning of April, so as to close with the examinations held at the beginning of May by the Science and Art Department. Candidates wishing to sit for the examination should make application during February to the Secretary, R.H.S. Office, 117, Victoria Street, Westminster.

The Council have heard with much pleasure that Mr. N. Sherwood, Esq., Master of the Worshipful Company of Gardeners, has most kindly offered, in connection with the Society's 1897 examination, a Scholarship of £25 a year for two years; full particulars of which will be found in the Society's Arrangements for 1897, lately issued to all Fellows. Another similar offer has been made by Mr. G. W. Burrows, Esq., a Member of the Court of the same Worshipful Company.

Acting in conjunction with the Liddleys Trustees, the Council have devoted considerable attention to the Library. All serial publications have been kept up to date, a large number of valuable books have been purchased, and the following new books, amongst others, added to the Library,

ing the fungus were taken to a field and fixed near several plants of Copodium denudatum. On visiting the plants on May 7, ascidiospores were found to be fully developed.

The writer will be glad to supply material to any mycologist interested in this species.

During the Christmas holidays of 1895, while in the Lake district, teleutospores of a Puccinia were collected on one of the larger sedges—probably Carex acuta (on the margin of Lake Windermere, and near a large Gooseberry bush, the leaves of which hitherto had been abundantly invaded by U. acidium grossularis). One half the material was forwarded to Dr. H. Klebahn, of Hamburg, and the remainder retained for my own experiments. The teleutospores were actively germinating on April 16, and on that date applied to Urtica dioica and Ribes grossularia, but no result ensued in either case, and the experiment was repeated on May 7, but again with no effect. Dr. Klebahn, however, proved the fungus to be Puccinia Pringsheimiana, Kleb., and writes that "in two cultures 29/4-15/5 and 8/5-21/5, it produced Eoidia on Ribes grossularia, while Urtica dioica remained free." The teleutospores of this species have hitherto not been detected in Britain, and doubtless have been confounded with P. caricis, Schum. I hope to repeat the experiment, and to have the host plants thoroughly established for the purpose. H. T. Soppitt, Hatfield, Yorks.

VEGETABLES—AVERAGE WHOLESALE PRICES. Table with columns for vegetable names and prices per unit.

The cold weather may indicate a better demand, but owing to the large stocks on hand, no advance in price is anticipated.

THE WEATHER.

[The term "accumulated temperature" indicates the aggregate amount, as well as the duration, of degrees of temperature above or below 42° Fahr. for the period named; and this combined result is expressed in Day-degrees—a "Day-degree" signifying 1° continued for twenty-four hours, or any other number of degrees for an inversely proportional number of hours.]

Table with columns for Temperature (Accumulated, Day-deg.), Rainfall, and Bright Sun. Includes data for various days and months.

The districts indicated by number in the first column are the following:— 0, Scotland N. Principal Wheat-producing Districts...

NOTICES TO CORRESPONDENTS.

ADANTUM: Ferns. Your practice of sprinkling the Ferns ought to be discontinued, and other means adopted for keeping the fronds, or rather the air surrounding the plants, humid.

BOOKS: T. T. An Introduction to Structural Botany, by Dr. D. H. Scott (London, Adam and Charles Black).

CHRYSANTHEMUMS: A. P. Madame Carnot and its yellow sport C. J. Warren; International, Viviani Morel, Chas. Davis, Mutual Friend, M. Pankoucek, Clas. Shrimpton, Phobus, Mdlle. M. A. de Galbert, Col. W. B. Smith, M. Chenu de Lechê, Reine d'Angleterre, Jno. Shrimpton, Baron de Buffères, Ed. Molyeux, Edith Tabor, and Mdlle. Thérèse Rey. The above will constitute a first-class collection of eighteen Japanese varieties for exhibition purposes.

EUCHARIS: T. G. Yes; the common Eucharis or bulb-mite in quantity. GARDENIA CANKER: J. H. W. We had to examine and report upon this canker some two years ago, and were unable then, as now, to indicate either cause or cure.

NAMES OF FRUITS: H. H. Letter received, but no fruits. NAMES OF PLANTS: Correspondents not answered in this issue are requested to be so good as to consult the following number.—Bassett, Vaccinium Mortinia (Andes de Ecuador)...

POTATO, SUTTON'S MAGNUM BONUM: H. T. This variety was raised by the late Mr. Clarke, and introduced by the firm of Messrs. Sutton & Sons, Reading. SALIX VITELLINA: H. G. H. The unripe tips of the shoot would be liable to injury from hard frosts, and also from wind whipping.

SCORBERTIA GRAVEOLENS: Constant Reader. This plant is now put under Physianthus graveolens. We are unaware if it has produced seed in this country. STEPHANOTIS FLORIBUNDA: Constant Reader. If you train out the annual growths (the stronger) before they become entangled, at 8 to 10 inches apart, and then get them well ripened, they will flower abundantly along the greater part of their growth.

COMMUNICATIONS RECEIVED.—H. G. C.—R. L. H.—T. B.—G. F. J.—S. W. G. S.—J. B. & Son.—F. T. J.—J. O. J. C.—M. D.—F. W. S.—D. T. F.—G. H.—W. M.—W. C.—F. T. Spynce.—J. B. York.—H. T. S.—W. B.—National Agricultural Union.—J. W.—W. G. S.—White Rose.—C. R. C.—B. W. & Co.—H. H. R.—J. H. C. S.—W. C.—F. A. W.—J. C.—W. E. W. & Son.—J. W.—J. W. Keele Hall.—C. J. B.—U. W.—W. G. S.—B.—J. O. B.—E. J.—Expert.—W. N.—G. M. G.—C. B.—Bassett.—C. Cudy.—H. J. A.—E. H. B.—Jas. Harris.—Dawtry.

SPECIMENS, PHOTOGRAPHS, &c. RECEIVED WITH THANKS.—R. F.—J. S.—H. Corfevoo, Geneva.—C. H., Proprietor.—M. F.

DEATH.—At Aberdeen, on January 10, THOMAS DARLING, Nurseryman (Cardno & Darling), in the eighty-fourth year of his age.

MARKETS.

COVENT GARDEN, JANUARY 21. [We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Thursday, by the kindness of several of the principal subsemen, who revise this list, and who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general averages for the week preceding the date of our report. The prices depend upon the quality of the samples, the supply in the market, and the demand; and they will fluctuate, not only from day to day, but often several times in the day. E. D.]

PLANTS IN POTS—AVERAGE WHOLESALE PRICES. Table with columns for plant names and prices per dozen.

CUT FLOWERS—AVERAGE WHOLESALE PRICES. Table with columns for flower names and prices per bunch or dozen.

FRUIT—AVERAGE WHOLESALE PRICES. Table with columns for fruit names and prices per bushel or dozen.



THE

Gardeners' Chronicle.

SATURDAY, JANUARY 30, 1897.

THE SURVIVAL OF THE UNLIKE.*

THIS volume is a collection of evolution essays suggested by the study of domestic plants. Part I. contains nine "essays touching the general fact and philosophy of evolution;" fifteen essays "expound the fact and causes of variation," constituting Part II.; while, Part III. contains the remaining six "essays tracing the evolution of particular types of plants."

The author's motive, he tells us, is "the emphasis which is placed upon unlikenesses, and of their survival because they are unlike." He denies that "organic matter was originally endowed with the power of reproducing all its corporeal attributes, or that like produced like. . . . Heredity is an acquired force, and normally and originally unlike produces unlike."

Mr. Bailey apparently draws the above conclusion from the extraordinary instability observable under cultivation, in which the permanency of racial characters is so difficult, if not impossible to acquire, as in Tomatoes; but while race after race may appear and "run out," yet the Tomato, as a garden fruit, is perfectly fixed and hereditary. Similarly, there may be any number of races derived from *Beta maritima*, but the Beet and the Wurtzel are fixed types by heredity, however numerous may be their races. It would seem necessary to emphasize this, as the heredity of acquired characters in plants has been called in question because races are so unstable.

When, however, we turn to Nature, then the opposite view at first forces itself upon the attention, viz., a constancy and fixity of characters by heredity, constituting strongly-marked specific distinctions. It was probably this which gave rise to the idea that species were absolute entities in Nature, originally created as they are now, as might be well illustrated by *Brassica oleracea*, which has few or no varieties in Nature; but they are almost innumerable under cultivation. If we knew nothing of garden productions, that "mutability as a law of Nature" would never have been suggested. That no true variety will arise if the environment be constant, is a belief based on a large amount of observation; but that new variations only arise in consequence of "changed conditions of life," as Darwin and Wallace call them, is accepted, I suppose, by all evolutionists in Europe. Indeed, these essays abundantly corroborate this belief.

In adopting the phrase, "the survival of the fittest," he would define them as the "unlike."

"In Nature, perfect adaptation is the end; she knows nothing *per se* as species or as fixed types. Hence there are as many species as there are unlike conditions in physical or environmental Nature."

This is all profoundly true, but our author seems a little inclined to forget that constant environments do exist, and that species subjected to them show no inclination to vary, as *Salix polaris*, since the glacial epoch; and the flowers of the garlands in the ancient Egyptian tombs are the same as to-day. Under horticulture, however, the reverse conditions prevail, and unlikenesses become the rule, and, thanks to this, new races are born every day.

To say, therefore, that "unlikenesses survive because they are unlike," is to transpose the cause and effect. Unlikeness to a parent is correlated with a better adaptation to the new environment, and is a result of the responsive power of the living protoplasm to the direct action of the surroundings. If a plant can adapt itself to changed conditions of life without varying, it evidently does not survive because of its likeness. Thus, *Oxalis cornua*, originally introduced into Malta from the Cape in 1806, is now spread over the whole of the Mediterranean regions on both sides of the sea from east to west, but has never changed in the least degree in its form.

When, however, Mr. Bailey appeals to facts, he arrives at the following and correct conclusion:—"I believe that the greater part of the present differences in organisms are the result directly and indirectly of external stimuli." And, therefore, mutability depends upon environment.

He suggests the following three causes of variation:—(1), External stimuli; (2), Inherent acquired energy (as seen in sports, primarily due to cultivation); and (3), sexual intermixing.

With regard to natural selection, he observes, "It has been the great misfortune of the interpretation of Darwin's writings, that his hypothesis of natural selection has so completely overtopped everything else in the reader's mind, that other important matters have been overlooked." This is very true; but it is admitted by Darwinians that natural selection is probably incapable of proof. Why such should be the case, if it be true, is a mystery. The present work is really a strong contribution to the anti-Darwinian literature from the horticultural point of view; for, although the author admits natural selection, he shows conclusively that it is a quite unnecessary factor in the origin of cultivated varieties and races. The author would see some exceptions to the rule, "that differences arise as the result of variations in the environment," such as the loss of floral reproduction when the vegetative system is in excess, as in Potatoes and other plants propagated by bulbs, &c.; but this is really no exception. It is only a secondary or indirect result of the environment, for the latter is the cause of the large-sized tuber, and the principle of compensation then follows—just as the enlarged corollas of the ray-flowers of the Corn-flower are neuter. So, too, if high cultivation be withdrawn, the plant reverts. The author accepts panmixia as the explanation; but surely, it is simply a deteriorated environment which brings about a deteriorated tuber, just as a rich soil enlarges it. "Weismann," he says, "attributes the greater number of these varieties which are usually attributed to the direct influence of external conditions of life, to be

attributed to panmixia." Why so? Why assume a non-proven hypothetical cause when the environment alone is amply sufficient?

As the author in the preface would regard his observations on bud-variation as his chief contribution to positive science, we will pass on to consider what he has to say on this subject. As a plant is a composite being, in that every part may be able to reproduce the whole, so every part can vary independently and give rise to sports or bud-variations, which arise as local adaptations on the plant. Just as seedlings are more variable under cultivation, so is bud-variation. Carrière in 1865 mentioned 154 named examples which Darwin recognised to be like seed variations "as being the direct result of the conditions of life to which the plant has been exposed." Mr. Bailey has paid great attention to the phenomena of bud-variation, and shows how varieties can and do frequently arise by it, quite irrespective of sexual processes.

Thus some seed varieties will not necessarily come true by cuttings, as the Tomato, and a long discussion is given of the large amount of variation which has arisen in the New Town Pippin,* which first arose in New York State, but has been widely dispersed by grafting; and different States have developed different forms of this Apple, respectively. "Still another proof of the similarity of bud-varieties and seed-varieties is the fact that the seeds of bud-varieties are quite as likely to reproduce the variety as the seeds of seed-varieties are to reproduce their parents." Thus, the Moss Rose reappears in seedlings, and can be transmitted by crossing. Of a peculiar Tomato, the author found that, "while most of the seeds 'came true,' but few of the second cuttings did, and, moreover, they 'sported' into several very unlike forms," with both red and yellow fruits.

As further illustrations of asexual variation among plants which bear no seeds, may be mentioned the Pineapple, Banana, and Bread-fruit, the Weeping Willow, seedless "top" Onion, and even the root of the Horseradish, and of the Jerusalem Artichoke; while hosts of *Agarics* have arisen of which not one has any sexes at all. A sexual variation is sometimes very rapid. Thus, "within two years the Chilean Strawberry varied from its wild type so as to be indistinguishable from the common garden Strawberry, which many botanists regard as specifically distinct from the Chilean." "Such a case directly refutes Weismann's hypothesis, "that all permanent or progressive variation is the result of sexual union."

This leads the author to show that true species are evolved under cultivation, in that many garden forms, as of the Tomato, *Phaseolus*, &c., differ among themselves quite as much or more than wild species do; and it may be as well to add that the old idea that species would not cross, is refuted every day; so that the idea of species rests now solely on form. Mr. Bailey very rightly observes that—"Species-making for ever enforces the idea of the distinctness and immutability of organic forms, but study of organisms themselves for ever enforces an opposite conception. . . . A new species, therefore, is made simply for convenience sake—hence systematic botanists look askance at horticulture. Asa Gray declared that the modern garden-Roses are 'too much mixed by crossing, and changed by variation, to be subjects of botanical study.' Considering

* A notice of this essay was contributed to the *Journal of Horticulture*, October 1, 1896, p. 315.

* By L. H. Bailey (New York: The Macmillan Co., 1896).

that we cannot certainly identify the original species of the Peach, Plum, Orange, Lemon, Wine-Grape, Sweet Potato, Indian Corn, Melon, Bean, Pumpkin, Wheat, &c., it is immaterial whether they are called species or varieties—they are new forms. . . . The horticulturist is one of the very few men whose distinct business and profession is evolution. He, of all other men, has the experimental proof that species come and go." *George Henslow.*

(To be continued.)

NEW OR NOTEWORTHY PLANTS.

CLEISOSTOMA ZOLLINGERIANUM, Kretl.*

A very curious plant of Vanda-like habit, but with very short spikes of only a single flower, and few empty bracts rising from the sheaths of fallen leaves in the basal part of the stem. The flowers are about 2.5 cm. in diameter, and resemble in colour a little to those of *Saccolabium bellatulum*. The sepals are narrow-oblong, the petals linear and spatulate to the top; the colour is a very bright yellow, with two or three broad bands of mauve-purple. The lip has two straight diverging linear side-lobes, the tops of which are blunt and a little emarginated, whilst the middle lobe is triangular and curved backwards and downwards. In the disk is a thick cushion of long golden-yellow hairs; the basal part between the side-lobes, the mouth of the short spur, and the characteristic lamella or plate on the base of the column are covered with dense but shorter hairs. The spur is very short and saccate. The column is also very short.

As said before, the flower resembles in general a small flower of *Saccolabium bellatulum*, still it is a true *Cleisostoma*. Species of this genus are not very frequent in cultivation, except in botanical gardens, where they are cultivated from scientific points of view.

The next allied species with which I am acquainted is *Cleisostoma Dawsonianum*, Rehb. f., described in the *Gardeners' Chronicle*, 1868, p. 815; but the lip of this species is five-lobed, and the column has two arms ending in pencil-shaped hairs. Except these two characters, which are of the highest systematical value, the whole of both plants seems to be nearly the same; especially the brush-like or cushion-like hairs of the middle lobe, and the rounded plate on the base of the column are undoubtedly very similar. I am indebted to Mr. Zollinger-Jenny, of Zurich, Switzerland, for living material and a sketch of the original plant. It is not the first time I have the pleasure to mention the name of this gentleman. I have received from him on several occasions rare plants, imported all from the same area in the far east. *F. Kraenzlin.*

AGLAONEMA OBLONGIFOLIUM, Schott, var. CURTISII, N. E. Br. (new var.).

A handsome form of *Aglaonema oblongifolium*, perhaps better known as *A. nitidum*, has lately flowered with Messrs. J. Veitch & Sons, to whom it was sent from Penang by Mr. C. Curtis. As with the other species of the genus, it is not the flowers, but the well-marked variegation of its foliage, that make it an attractive plant to the horticulturist. In size shape of foliage, and in the inflorescence, it does not differ in any way from the ordinary dark glossy-green form of *A. oblongifolium*; but the leaves, which have petioles 3 to 9 inches long, and oblong acute blades 4½ to 14 inches long, by 1½ to 4 inches in

* *Cleisostoma Zollingerianum*, Kretl.—Caulis valido subcompresso ad 40 cm. alto; foliis distichis oblongis apice bilobis 10 cm. longis, 3.5 cm. latis; racemis in inferiore parte caulis e vaginæ nascentibus, brevibus unifloris (1), bracteis minutis triangularibus; sepalis obovatis unguiculatis obtusis; petalis æquilongis linearibus supra apiculatis; labelli lobis lateribus cum intermedio cæcis linearibus apice reflexis emarginatis intermedio triangulari-revexo apice minutissime bi-quadrilobis, pulvinari longa piloso in disco infra et apice glabro, fauce et lamella fauce rotundata pilosis, calceari ab ovato saccato; gynoecium longe truncato. Sepala petalibus 1.2 cm. longa, sepalis 3 mm., petalis vix 2 mm. lata, lobis late purpureo-tilatis. Labellum pallide latum, pili acris et pulvinariæ acri. Insulae Sondaicæ.

breadth, are most distinctly and prettily variegated with white along the course of the principal lateral veins.

It is hoped that this variegation will prove to be permanent, for it is rather effective. But in 1885, a plant at Kew, that was also sent from Penang by Mr. Curtis, had one leaf near the basal part of the stem variegated exactly in the same way as Messrs. Veitch & Son's plant, and all the other leaves on the plant were of the usual deep glossy green of the typical form. *N. E. Brown.*

ORCHID NOTES AND GLEANINGS.

CYPRIPEDIUM INSIGNE SANDERÆ.

In your issue of November 28 last, p. 657, "J. H. T.," replying to "J. A.," says that there was only one plant originally of *Cypridium insigne Sanderæ*, part going to Baron Schroder, and the other part to Mr. Measures, both pieces flowering alike. How then comes it that Mr. Ball, Wilmsholm, has a plant named *C. Sanderæ* which is quite different in shape and colour to the original one? Also, that Mr. Fred Hardy, Tyntesfield, has another named

LÆLIA ALBIDA STOBARTIANA.

Under this name the late Professor Reichenbach evidently intended to place all the varieties with the same characteristic ornate colouring, for in the original description of the type, in which he refers to other specimens of it, *Gardeners' Chronicle*, vii., 1877, p. 271, he says, "This is a very pretty novelty, sometimes with very large flowers." This week specimens of it have been received from W. C. Walker, Esq., Winchmore Hill, and H. Cary Batten, Esq., Abbot Leigh, Bristol. The flowers are large for the species; white, with the tips of the sepals and petals coloured rose-purple for about one-third of their length, and the front lobe of the lip of a rather darker rose-purple with an orange keel in the centre. It is a pretty variety of a very useful winter-flowering species.

LUDDEMANNIA LEHMANNI.

In describing this very striking and showy Orchid, Reichenbach designated it "a fresh member of the mysterious genus *Luddemannia*," and until recently but little was known of the plant. For some time past it has been in flower in the collection of R. I. Measures, Esq., Cambridge Lodge, Camberwell (gr., Mr. H. J. Chapman). The large pseudobulbs



FIG. 18.—SPECIMENS OF CRESTED CYCLAMENS. (SEE PP. 70, 81.)

Sanderæ, which differs from both the above? Both these varieties must be spurious, since they are not *C. Sanderæ*; but, at any rate, the one Mr. Ball has is really a very fine flower, and much superior to Mr. Hardy's in point of size and colour. Orchidists seem to have a curious way of sometimes multiplying names for the same variety, and also of reversing this process by having several varieties under the same name. *S. S.* [The statement of "J. H. T." referred to above, is quite correct. There are not two varieties of *C. insigne Sanderæ*, though possibly the allied, but inferior, *C. insigne Sanderianum*, and other similarly inferior varieties, may have got confounded with it in some gardens. Ed.]

CYPRIPEDIUM CALLOSUM SANDERÆ.

Not until Norman C. Cookson, Esq., of Oakwood, Wylam, in a letter dated January 18, conveyed the information—"So far I have no seedling *Cypridium callosum Sanderæ* up"—was I aware that the remarks in the *Gardeners' Chronicle*, January 2, p. 1, under the heading of "Novelties of 1896," in which Mr. Cookson's success in raising *C. Lawrenceanum* Hyeatum, and kindred subjects true from seeds, is mentioned, was not correct so far as *C. callosum Sanderæ* is concerned. Mr. Cookson, however, hopes to raise it in a similar manner to the kindred *C. Lawrenceanum* Hyeatum, illustrated from his home-raised specimen in the *Gardeners' Chronicle*, January 16, p. 37.

and stout plicate leaves much resemble those of the *Acinetas*, and from the base descends a pendulous raceme of many wax-like orange-coloured flowers, tinted on the reverse side of the sepal with copper colour. The individual flowers are both curious and pretty, and the plant being evergreen is always ornamental. *James O'Brien.*

CYCLAMENS.

THE strains and races of *Cyclamen*, which form so beautiful a display at this season of the year, are all the result of variation under cultivation of one species, *C. persicum*; so that in this case the "improvement" cannot be attributed to cross-fertilisation. Lately, there have been fresh departures from the type which had fair to be the forerunners of different forms, and are thus of great interest to students of evolution, as well as to florists. Whatever we may think of them now from the æsthetic point of view, it is certain that they will develop into forms of greater beauty in the future.

The illustrators (figs. 18, 19) show a variation which we first observed a few years ago, in which the petals branch so as to form crests and fringes analogous to what we see in many of the *Kails* (see *Gardeners' Chronicle*, May 7, 1887, fig. 118). Now Messrs. Low have taken the matter in hand, with the result shown in the woodcut—an additional figure

(fig. 18c) is given in anticipation, as showing what we are likely to get.

Another variation consists in the branching of the edge of the petals, so as to form a fringe analogous to what we have in the Chinese Primrose. This race was first brought under our notice by M. de Langhe-Vervæne, of St. Gilles, Brussels, who designates his strain as "Papilio" (fig. 19). Specimens of this *Cyclamen persicum* var. *papilio* were recently brought under the notice of the Floral Committee, and were specially remarkable for the breadth of the petal, which was often less reflexed than usual (see p. 51 in *Gardeners' Chronicle*, January 16). No doubt these variations

A NURSERYMAN'S PARADISE.

LAST summer, while on a visit to northern Italy, a call was made by me at Pallanza, a small town on Maggiore, Italy's largest lake. The situation of this fair spot on a promontory of the western shore is very fine, but the most favoured position of all, viz., the actual tip of the promontory immediately beyond the town, is owned and occupied by Messrs. Rovelli Bros., nurserymen. From their beautiful gardens an almost uninterrupted view is to be had of the lake, from the encircling Swiss mountains on the north to the pretty rolling country at the foot of Maggiore.

to be wondered at that Mr. Rovelli should have determined to establish for himself an exotic nursery. Nor could he have chosen a more ideal position for such a purpose.

It may be stated at the outset that the strength of the collection is in its out-door growth of trees and shrubs, of which such a wonderful assortment, and so many rare and beautiful kinds, may be met with, that one can only attempt to give notes of some of the most important ones.

Such a series of specimens could not well be grown otherwise than under the Pallanza conditions of atmosphere. The temperature is very moderate on account of the shelter afforded from the north and east by the encircling Alps, and also, no doubt, because of the tempering influence of the vast sheets of water evaporating on either side of the nursery. The minimum winter temperature of the nights is only from 3° to 5° below zero of Centigrade, or 5° to 9° of frost according to the Fahrenheit scale. During the day-time, the minimum is about 3° Fahr. only of frost. Except during unusually hard winters, the night temperature may show a somewhat lower reading, but the variation is said to be always small.

Several of the scarcer sorts of Asiatic and American trees attain in Messrs. Rovelli's nursery to a great height, and show a luxuriance of growth almost without parallel away from their native habitat. Several trees are especially noteworthy too, on account of their great rarity, notably, a magnificent plant of *Keteleeria (Abies) Fortunei*, which Messrs. Rovelli consider to be unique (see *Gardeners' Chronicle*, 1884, vol. xx., pp. 423, 429, figs. 82, 83). In point of size, this is undoubtedly so, but since returning home, two other specimens in England have come under our notice, one with Messrs. Veitch & Sons, and the other in the arboretum of J. R. Ashleigh, Esq., Menabilly, Cornwall. The Pallanza specimen measures 14 metres in height, and 12 metres through the foliage, or about 46 feet high, and a little over 39 feet through. Resembling a Cedar in appearance, when fully grown, *Keteleeria (Abies) Fortunei* is unique among Firs. The branchlets are sub-pendulous, the leaves pointed, about an inch in length, and either scattered or ranged in a spiral fashion round the branchlets. The cones (see *Gardeners' Chronicle*, 1884, vol. xxi., p. 348), reaching 6 inches in length, taper somewhat from base to apex. Its habitat is south-eastern China, where it may be found on the mountains to the north of Foo Chow in abundance.

Of the genus *Pinus* growing in Messrs. Rovelli's nursery, the following are worthy of mention:—

Pinus patula (Mexico), a very distinct species, about 45 feet in height; foliage spreading and pendulous. Veitch, in his *Manual of Conifere*, 1881, p. 172, says:—"A beautiful Pine, with spreading branches and long pendulous foliage. In its young state it is 'as like a green fountain as a green Pine,' on account of its bright green, drooping slender leaves, which quite conceal the stem and branches." (See *Gardeners' Chronicle*, 1885, vol. xxiii., pp. 108, 109, figs. 19, 20.)

Pinus longifolia, a tall, sparingly-branched species, with vivid green pendulous foliage. A native of the valleys of Nepal and Bhutan, India; one of the most valuable timber trees in the Himalayan region.

Pinus peustris, a grand specimen, some 45 feet in height. Native of North America.

Pinus Russelliana, foliage borne in tufts at the extremity of the branches; leaves very long and pendulous. This is a fine and distinct-looking tree, of somewhat tender constitution. Habitat, Real del Monte, Mexico.

Pinus insignis (California).—This well-known species in English nurseries may, at Pallanza, be seen 45 feet high at least!

Pinus Lambertiana is a species noted as being the tallest-growing Pine known; in its native home it is said to reach 200 or 250 feet in height. Its cones are proportionately large, from 15 to 20 inches long, and its seeds are edible. Found in California, Oregon, &c.

The Pallanza collection is specially rich also in the genus *Cupressus*, and one is struck at once by their



FIG. 19.—A FRINGED CYCLAMEN FLOWER, *C. PERSICUM* "PAPILIO."

originate in some disturbance of nutrition at a particular stage of growth, but this explanation does not lead us very far in determining the proximate causation. In any case, it is desirable to record the first beginnings of changes which may ultimately prove of great horticultural importance.

In this connection we may also mention a variety, flowers of which have been sent us by Mr. Perry, gardener at Higham House, Colchester, and raised, as he tells us, between Messrs. Sutton & Sons' variety *C. p. Butterfly*, and an old strain of *C. persicum*. The flower nearly equals in size the first named, but is not pure white, there being a purplish stain at the edge of the orifice.

It was in this unique position that in 1848 the late Mr. Rovelli, acquiring several acres of land, established a nursery. Prior to that date Mr. Rovelli had for years held the responsible post of Director of the Borromeo Islands—a miniature archipelago in Maggiore, close to Pallanza. These islands have been the property of the Borromeo family since the 17th century, in the last decade of which the barrenness of the Isola Bella was turned into loveliness by the formation of terraced gardens, stocked with luxuriantly-growing tropical plants and trees, with the addition also of a stately chateau.

The love of arboriculture and knowledge of exotics having been acquired in this lovely spot, it is hardly

gracefulness and beauty, as well as by their vast proportions.

Cupressus Hugelii (= *Benthami*), a specimen 45 feet in height.

Cupressus Corneyana, a variety of *C. torulosa*, from the Himalayan region, and possibly from China.

Cupressus species? "from the hills of India," 45 feet high.

Cupressus torulosa majestica, 40 feet.

Many *Thuja*s have also attained great heights. *T. gigantea* as much as 45 feet.

The so-called Umbrella-Pine of Japan, *Sciadopitys verticillata*, may here be seen in fine character, 20 feet in height, and beautifully furnished.

Of other choice specimens, *Cunninghamia sinensis glauca*, *Abies bracteata*, and *A. lasiocarpa* (*Lowiana?*) each attain to 40 feet, and *Arnica brasiliensis* to nearly 50 feet in height—truly a noble tree.

Of all the rich assortment, perhaps the most beautiful is the graceful, free-growing, but somewhat tender *Pseudolarix Kaempferi*, which, on account of its long, delicate green foliage, has a character at once charming and graceful, in strong contrast to the majority of the Fir-tree tribe. This comparatively little-known species may here be seen as a large tree (see *Gardener's Chronicle*, 1884, vol. xxi, p. 581, fig. 112).

On the northern slope of the nursery promontory there is a grove of *Camellias* of the choicest kinds—large trees and small, some veritable giants of great age and others suitable for pot culture; all healthy and well grown, including among their number the finest types known to commerce. It is surely a cause for no little regret that these beautiful flowering trees should have grown into disfavour of late, for though somewhat formal in their growth and inflorescence, they fill a place which notwithstanding modern introductions has not yet been superseded, and it is to be hoped that these Asiatic gems will shortly once more become popular.

Of out-door growing Palms, Messrs. Kovellev have a large and valuable assortment, and it is wonderful how their various points and peculiarities are displayed to advantage when growing naturally in the open ground, whereas in greenhouses they are often so cramped that an attempt at scientific comparison is rendered most difficult.

Hardy Bamboos too, which are now becoming so deservedly popular, are here in abundance. Fresh impetus has now been given to their culture by great private growers, notably by A. B. Freeman Mitford, Esq., of Batsford Park, whose invaluable paper read before the Royal Horticultural Society, and published in their *Proceedings* for July, 1896, should have a most beneficial influence in furthering the study and cultivation of Bamboos in England.

Many of the scarcer kinds are still hard to obtain, though we venture to predict that the day will soon arrive when no great south-country garden will be considered complete without its collection of hardy Bamboos, *J. B.*

NURSERY NOTES.

ORCHIDS AT MESSRS. H. LOW & CO.'S, CLAPHAM.

Those of us who have been accustomed to pay visits to the celebrated London nurseries for the last thirty or forty years have seen many changes. It used to be a pleasure thirty years ago to visit Messrs. Low's, and inspect the Orchids and fine collection of Cape and New Holland plants. From there it was a mile or two further out to the Lea Bridge Nurseries of Messrs. John & James Fraser, where the collection of specimen hard-wooded plants and Azaleas were grown—the winners of many first prizes at the leading metropolitan exhibitions. Gradually but surely the famous Lea Bridge Nurseries have been absorbed by the builder of villas to let or "for sale on easy terms." Mr. John Fraser has moved to higher and better ground with a purer air at Woodford. Messrs. Low are now going through the same process of development. In a few more years the Clapton Nurseries, known to most of us since our

boyhood, will probably be seized upon by the vendor of villas. In the meantime, the Enfield Nurseries of Messrs. Low are developing into importance, and new houses of considerable magnitude have been built for the Cape and New Holland plants, which are not yet out of fashion; and now the Orchid-houses are being built, the Cattleyas have been sent to Enfield, and other things will follow. Dwellers in the east and north-east of London are also feeling the effects of the fog to a greater extent year by year. Mr. Fraser found it so at Lea Bridge. Mr. John Warl, at Leytonstone, tells me that he cannot grow plants there that he used to grow well fifteen or twenty years ago. Mr. Low makes the same complaint, and I am in the same predicament, although I am further out than either of them. Thus, if not hundreds, of thousands of houses have been built in fifteen years in the east and north-east, and the smoke of these rising heavenwards is doubtless the cause of so many good growers failing to grow plants as they used to grow them, and forcing us to seek a purer air further from London. There are some Orchids still doing well at Clapton, and first and foremost are *Phaleopsis*. A large span-roofed house was filled with these plants recently. The flowers of *Phaleopsis* open badly, or not at all, in foggy weather, but the health and vigour of the plants remain excellent. The rarer and more beautiful varieties are amongst the supposed natural hybrids. *Phaleopsis intermedia Portei* is a very fine form; has sepals and petals white, with purplish base; and the lip rich rosy-purple and reddish spotted. *P. intermedia Brymeriana* is also a very delightful form. *P. leucorhoda* was also there in all its beauty, another hybrid which we owe to the agency of insects between *P. Aphrodite* and *P. Schilleriana*. There were also many fine plants in flower of *P. Schilleriana*, *P. Stuartiana*, and *P. amabilis*. The last three the most distinct and beautiful of Orchids.

A houseful of *Mittonia Roezlii* showed how well this fine species thrives in the London smoke. I have grown this plant well, and seen it well grown in other collections, but never before have I seen such a fine lot of plants as were to be seen here. Many of the white and blotched varieties were in flower, and the flowers do not suffer. Next to these are the *Cypripediums*. Mr. Low has acquired a fine collection of hybrid forms—the Tautz collection which contained many fine varieties, which have flowered well; doing well in the London atmosphere, the flowers last a long time in good condition. There are many now in flower, principally English-raised hybrids. *C. Morganii* is one of the best, it is a cross between *C. superbians* and *C. Stouei*. The dorsal sepal is whitish with purplish veins, and the petals about 6 inches in length, are freely spotted like *C. Stouei* *platytenium*, and it is quite as handsome, and perhaps more elegant. *C. leucorhoda*, a lovely variety, raised by crossing *C. Roezlii* with *C. Schlumii* *albiflorum*. This is to us the most fascinating of garden varieties, the ivory-whites of the upper sepal, petals, and lip, shading to delicate rose and rose-pink, are lovely. A plant of *Measuriastrum* is in flower; it is one of the best of the *C. vancouverensis* crosses. The whole flower, but chiefly the dorsal sepal, is veined with green from *C. venustum*, but the lip and sepals show the *C. villosum* parentage. *C. Lathamianum* is distinct and handsome, a cross between *C. Spicarianum* and *C. villosum*. The reverse cross has also been raised, and named *C. Hera* and *C. Bellona*; the two were in flower together, and seemed to be much alike. *C. Salfiori*, from *C. villosum* and *C. insigne*, raised in France, is also very fine as a garden hybrid. *C. Madame George Truffaut* was opening its flowers, and promised to have very rich and dark-coloured blooms; its parentage is *C. Stoneii* and *C. ciliolaris*. Of the *C. insigne* varieties, there are *C. Sandersi* and *C. Sandermanum*, with some other fine varieties not in flower, but of great commercial value.

I have left *C. Lecanum* until the last, but Messrs. Low possess all the best varieties; and as many of them are now in flower, one can judge of their merits.

C. Lecanum superbum, Low's variety, is not the largest, but the flowers are the most elegant and prettiest of the collection; the upper sepal is

pure white, beautifully spotted violet. *C. L. gignentum* is large and handsome. *C. L. compactum* is a fine form of *superbum*; but there is much variation in the large collection.

Amongst rare and beautiful things in flower was a charming *Lælia*. "A rare plant seen in Brazil," L. Lindleyana, the flowers are small in size, delicate bluish shading to purple. It is figured in *Botanical Magazine*, tab. 5449, as *Cattleya Lindleyana*. Only a few *Dendrobiums* were in flower, *D. heterocarpum*, the well-known parent of the best garden varieties; *D. Dominianum*, delicate rose-purple; *Arides falcatum* *Houlletianum*, yellowish flowers, purple spotted. There is also a lovely pure-white variety of *Cattleya Gaskelliana*; the entire flower pure white with a stain of yellow in the throat. An immense number of plants of *Angraecum sesquipedale* were in flower, with smaller number of *A. eburneum*.

The last plant that I noted is *Dendrobium Johnsonii*, which has pretty pure-white flowers, the crest of the lip beautifully marked violet-purple. *J. D.*

MESSRS. SUTTON & SONS, READING.

On Wednesday, 20th inst., I was enabled to visit this nursery and view the *Primulas* and *Cyclamens* at present in bloom. The *Primulas* are arranged in batches of one colour, and so blended in regard to colours as to make them appear very fascinating. They are exhibited in great variety, and their flowers are of great size and beauty. There were remarked on one side of a house plants of *Primula sinensis stellata*, known commonly as Sutton's Star *Primula*, which was one mass of white flowers, with occasionally a flake of crimson in the star-like blossoms. The foliage resembles that of *P. sinensis*, and the flowers are borne in tiers one above the other in profusion.

The "Giant" *Primulas*, with single flowers, were noticed as being very vigorous in growth, and in some instances in flower, the flowers being as large as a crown-piece. The plants were arranged in batches of colour. Of named varieties that were particularly pleasing, mention may be made of Pearl, Brilliant Rose, Royal White, Reading Scarlet, do. Blue, and do. Pink, Snowdrift, Gipsy, and Rose Queen.

The double-flowered varieties in the scarlet, pink, blue, white, and flaked, were the perfection of *Primulas*.

The *Cyclamens* presented a brilliant display, arranged in large batches like the *Primulas*, and I filling several houses. The colours are exceedingly varied, and range from white, red, rose, pink, crimson, and purple. The most noticeable varieties were *Butterfly*, a pure white flower of great size; *Salmon Queen*, a variety with flowers of brilliant pink, and finely-marked leaves; *Vulcan*, a crimson-coloured flower of striking proportions. These plants are so sturdily grown that sticks are not needed. *R. C.*

CELERY-GROWING.

A CORRESPONDENT of *American Gardening* gives an account of his method of growing Celery, from which we extract the following particulars:—

"I now have very fine Celery grown in rows at an average distance of 1 foot apart, i.e., two rows, 6 or 7 inches apart, with an 18-inch space between them. Boards are set on both sides of the double rows when the plants are about half grown. The boards should be kept well apart until the Celery has nearly reached its growth, so as to keep the leaves green and exposed to the air. The boards may be held in place by a short piece of board with notches sawed in both ends and placed on the others, so as to hold them the right distance apart.

"The space between the rows was mulched with manure or other material that would hold moisture. Then I turned water on the rows and kept them thoroughly wet. The water was taken from a brook nearby, and elevated 6 or 8 feet in a water-tank, and distributed over the pieces with iron pipes and hose. One could almost see the plants grow.

"When the Celery had about got its full growth the boards were crowded closer together, and the blanching was completed in a very few days. The result was a large growth of well-blanching Celery.

"The advantages of this method are that about three times as much Celery can be grown on the land as by the old plan of setting it in wide rows; two rows being boarded together, it saves one half the boards; no earth is put around it, which saves washing the Celery. If the rows are mulched, it keeps down the weeds and retains moisture. No one will succeed with this plan except on very rich soil, and when the rows are so close together irrigation is indispensable.

"This method is only adapted to early Celery and the self-blanching varieties. White Plume Celery plants are grown in hot-beds for the earliest Celery; followed by the Golden Self-blanching for late fall use.

"For winter Celery I set the Giant Pascal, Half Dwarf, and Golden Heart in rows 1 foot apart, leaving some wide rows to stand in when working it. This is irrigated the same as the early Celery, but is not banked or headed, as it blanches well after being stored in the cellar or trenches for winter."

Selected specimens of Celery fetch a fancy price, so that the writer says he was getting for such specimens over 30 dollars per square rood, or at the rate of 5000 dollars per acre: "Ordinary Celery paid me at the rate of 300 dollars to 400 dollars per acre, or less than one-tenth of that which was grown by special culture and marketed without the help of the commission dealer.

"By comparing the profits of these two shipments it is easy to see where the money is in gardening. In the labour required to grow them there was but little difference. The greater profit in the first instance was made by using large quantities of fertilisers and irrigation."

AMERICAN NOTES.

NEW SWEET PEAS.

EVERYTHING goes to show that the Sweet Peas will retain this year the remarkable favour which they have been developing for several seasons past. The methods and the material foundation furnished by Mr. Eckford have been rapidly utilised and adapted in this country. There are many Sweet-Pea amateurs and professional experts in the Eastern States; but California is now the scene of most of the commercial variety-breeding and seed-growing. Immense tracts of land are there given up to the production of Sweet Pea seeds in a specially favourable climate, and in the charge of notable specialists. A very promising list of new varieties is offered for 1897.

SPINACH.

Perhaps the best of recent contributions in horticultural lines from American Experiment Stations is Professor L. F. Kinney's bulletin on Spinach. He reviews critically the history of the development of our garden varieties, their botanical origin, and gives a classification as the result of his field study, embracing practically all varieties known in this country. According to Professor Kinney, all the garden varieties of the commonest species (*Spinacea oleracea*), may be reduced to four types:—1, Norfolk, or Bloomsdale group; 2, round-leaved; 3, thick-leaved; and 4, prickly-seeded Spinach. Besides these, there are occasionally grown New Zealand Spinach (*Tetragonia expansa*), and Mountain Spinach (*Atriplex hortensis*). A thorough study of cultural methods for market gardeners is added.

HORTICULTURAL INSTRUCTION AND THE "SURVIVAL OF THE UNLIFE."

The recent publication of Prof. Bailey's *Survival of the Unlike* (see p. 69), marks a great development in American methods of horticultural instruction, and less significantly indicates a recent widening of the field of evolutionary philosophy. Within the last ten years the few agricultural colleges in this country were mostly of the training-school type, giving elementary manual instruction. The recent notable extension of agricultural courses into universities and institutions of higher learning, has had a tendency to put horticultural instruction into a basis like that occupied by related natural sciences. Thus, students

of horticulture daily handle the most profound problems of vegetable physiology and developmental philosophy. They take up theoretically and experimentally such problems as are discussed by Geddes, Weismann, Nageli, and Bailey. Professor Bailey has himself been a leader in this sort of horticultural teaching; and his new book may be best understood as an expression of that idea. It deals philosophically with the ultimate principles governing the

appearance is sufficiently indicated in the woodcut (fig. 20). We can only add that the flower-segments are white, with a pale purple spot at the base externally, but purplish internally. The filaments and anthers are both purplish. As the collections from Chitral get examined, we shall doubtless hear more of what is, in any case, a pretty garden Tulip, probably an albino of some known species.

THE LILIES OF THE PACIFIC COAST.

THE Pacific coast of the United States is wonderfully rich in members of the Lily family. With nearly forty *Calochorti*, over twenty *Brodieae*, and thirty *Alliums*, nine *Fritillarias*, and ten *Erythroniums*, as many or more *Liliums*, and fifty other species distributed among twenty-five genera, the Liliaceae of the Pacific slope include a grand total of over one hundred and seventy species in a vast and comparatively unknown region, the exploration of which annually adds new species, or proves the existence of forms described by the earlier botanists, and since lost sight of. I doubt if there is any other region in the world where the Lily family is so rich and varied.

The number of *Liliums*, or true Lilies, on the coast, varies according to the nomenclature followed. *The Botany of California*, published in 1880, mentions eight species and one variety. Mr. Baker more correctly, as I think, distributes the same material into fifteen species and varieties in his synopsis of the genus. These species can be divided into several groups, according to their natural affinities. *Lilium Washingtonianum* and its varieties, with the nearly related *L. rubescens*, will form the first of these groups, and into the second will naturally fall *L. Columbianum*, *L. Humboldtii* and its varieties, and *L. Bloomerianum*, which is also known as *L. Humboldtii*, var. *ocellatum*. *L. Bolanderi*, too, shares in the solid ovoid bulb and leaf-character of this group, although its flowers differ in form.

A third group, and a very large one it is, will contain the western relatives of *Lilium superbum*, large bog Lilies with rhizomatous roots and revolute flowers. These are *L. pardalinum*, *L. Roezlii*, and *L. Warei*, with the innumerable forms of *L. pardalinum*, some of which, as *L. californicum*, *L. Bourgei*, and *L. puberulum*, are often treated as species. This wonderfully varied group is connected by a close chain of intermediate forms, possibly crosses, with the next group, which consists of the western relatives of *L. canadense*. In this group of small-flowered bog Lilies, *L. parvum* is nearly as various in its forms as is *L. pardalinum*; but *L. maritimum* is, as far as my observation goes, strictly monotypic. The type of *L. parvum* and *L. maritimum* have funnel-formed flowers.

Lilium Parryi is closely related to the *Pardalinum* group, differing only in having trumpet-shaped flowers. In growth, it can hardly be distinguished from *L. pardalinum*.

Of these eleven species, *Lilium pardalinum* is most widely distributed, being scattered from central California to British Columbia, and eastwardly to the shores of Lake Winnipeg. *L. Washingtonianum* inhabits a long and narrow belt in the main Sierra Nevada range, and in the Cascades to British America. *L. Parryi* is found in Arizona as well as in its original location in southern California, and *L. Columbianum* is found to extend far east of the Cascades in the Columbia River valley, but with these exceptions these Lilies belong to the mountainous regions of the Pacific coast proper in the Sierra Nevada and coast ranges. *Carl Parry*, in "*Garden and Forest*."



FIG. 20.—TULIP FROM CHITRAL. FLOWERS WHITE.

origin and distribution of varieties as those principles are to be seen exemplified in the fruits, flowers and vegetables with which the horticulturist has to deal. *F. A. Wagh*.

A NEW TULIP.

At the last meeting of the Royal Horticultural Society, Messrs. Sauder exhibited a pot of what we are constrained to call a new Tulip, for its specific name has not yet been accurately determined. Messrs. Sauder inform us that it came from Chitral. Its general

TROPICAL SEEDS AND PLANTS.—Seed catalogues are so numerous, that any special mention of particular examples would be unfair unless they are marked by some special peculiarity. This is the case with Messrs. J. P. WILLIAMS & BROTHERS, of Henaragoda, Ceylon, whose catalogue contains a descriptive list of tropical plants suitable for cultivation on a commercial scale.

THE WEEK'S WORK.

THE FLOWER GARDEN.

By CHARLES HERREN, Gardener, Drogheda, Maidenhead.

Subtropical Plants.—Seeds of some of the slower germinating species should now be sown, viz., *Canna*, *Grevillea*, and *Eucalyptus*. The seeds of *Canna* germinate quickly if before sowing them they are soaked for twenty-four hours in water which is kept rather warm. Some of the novelties of the Crozy section of *Canna* have beautiful flowers, sad handsome, distinct looking foliage, and mostly they are of a dwarf habit. Plants which have been stored may now be increased by cutting up the rhizomes into pieces with one or more buds, potting them into pots of 5 or 6 inches in diameter. After potting and watering them slightly, place in an intermediate-house, or plunge in a bed of leaves having a mild heat.

Carnations.—Those of the "Marguerite" type usually raised from seed may now be sown early if required to make an out-door display in the month of August. The flowers of this variety are also admirable for cutting at a time when most of the other varieties have run out of bloom. The seeds may be sown in small shallow boxes or pans filled with sandy-loam and leaf-soil, standing these on a mild hot-bed till the seeds germinate. Then removing to cooler quarters, and pricking them off into other boxes when two pairs of leaves have been made. The seed of the white variety may be relied upon to produce plants which come true, and the white, fringed blossoms are attractive and useful in the autumn for a variety of purposes.

Sweet Peas.—For the production of early blossoms, seed should be sown forthwith in pots placed in a late Peach-, or other forcing-house, with a temperature of 40° to 45°, and immediately the plumule pushes through the mould, the pots should be transferred to a coldframe. As a means of making the most of choice varieties, the seed of which is dear and scarce, sowing in pots is to be recommended, and if six or eight seeds are sown in a small 48, the entire potful may be turned out in the spring without loss. Sweet Peas look well in the borders in clumps of three or more potsful, or they may be put out in lines as usual. Where space can be spared in the kitchen garden, a long row or two should be sown for cutting from, and the soil usually being richer than in the flower-garden, the production of flowers is greater and longer continued if the seed-pots are kept picked off. The colouring of many of the newer varieties is rich and effective, and a dozen good ones will be found in the following—*Bianche Borpee* and *Emily Henderson*, two good whites; *Mars*, bright fiery crimson; *Countess of Radnor*, delicate mauve; *Lady Penzance*, fine bright rose; *Princess Beatrice*, a popular pink variety; *Captain of the Blues*, pale blue and purple; *Primrose Queen*, pale primrose; *Senator*, bronzy purple; *Dorothy Tenant*, rosy mauve; *Boraston*, dark maroon; *Monarch*, bronzy crimson and violet.

Begonias.—The tuberous-rooted *Begonia* has now become popular as a bedding-plant, and for a wet summer it is as such, in advance of the *Pelargonium*. The past two summers have not been "Begonia summers," but a position can generally be found for a bed or two, where if kept fairly moist, the plants are sure to make free-growth and flower well. Old tubers should be kept cool for a little time longer, unless it is wished to increase any of them by division. Preparatory to starting them for this purpose, the tubers should be placed closely together, in boxes or pans, upon a layer of leaf-mould or Cocoa-nut-fibre-refuse, and just covered with the same. They then require to be put where there is enough warmth to start them very slowly into growth. A slight dousing over with tepid water should be afforded the mould when it appears to be dry. When the new shoots have reached a height of 1 inch, the tubers should be cut up into as many pieces as may be desirable, reserving one or more shoots to each, dipping the cut parts in fines and or charcoal powder, and potting them singly. Very little heat should be applied, as it is essential that a sturdy growth be made. If seedlings are required, seed should be sown forthwith. For this purpose the single erect flowering varieties are the best. The nurserymen sell *Begonia* seed in separate colours, which come fairly true to kind. As the seed is very minute, especial care must be bestowed on the sowing of it; and small square, shallow boxes or earthenware pans (not new) should be chosen for the purpose. Place 1 inch of crocks over the bottom,

and then some rough leaf-mould, and having some finely sifted peat, leaf-soil and sandy loam in equal proportions, fill the boxes, &c., pressing the soil firmly and making the surface smooth and level. Scatter the seed thinly and evenly over the surface, no sand being used before or after sowing, but cover closely with a piece of slate or glass, and plunge the boxes or pans in a gentle bottom-heat affording little if any water before germination has taken place.

The surface-soil should not be allowed to become dry, and if the sheets of glass are carefully shaded from sunshine, no water will be required before the plants appear. In the case of the pans getting very dry, partially immerse them in warm water till the soil is made moist, but without allowing the water to rise quite to the surface of the soil. Fibrous-rooted *Begonias* of the semperlorens type may be raised in the same way, several of the varieties as *Crimson Gem*, and others of rose and pink shades, are very free of growth and flower, and of use in forming distinct beds of colour or for mixed bedding.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower, Burford, Dorking.

Heating the Houses.—For several days past cold winds have prevailed, penetrating the Orchid-houses, and rendering heavy firing a necessity. As the plants suffer at such seasons from the aridity caused by hot-water pipes highly heated, no more heat must be employed than is really necessary; at the same time, condensation in the temperature to any great extent should be avoided. As a means of maintaining the proper degree of warmth, without heating the hot-water pipes too much, some garden-mats should be laid along the lower part of the roof at dusk, making them secure against the wind. As an experiment in this direction, I have drawn down the wooden lattice blinds on several of the houses, letting them down above the mats, and have found them to be useful in keeping the mats from being shifted by wind, and preventing to a perceptible degree the wind impinging on the glass, thereby keeping the houses warmer with less fire-loss. Houses so covered have not the stuffy air that is generally noticeable when thick canvas-blinds are used for the same purpose. Where much artificial heat is used, its effect may be obviated in part by the admission of air whenever this is practicable or desirable, and by damping the soil or floor beneath the hot-water pipes several times daily. During the winter, the mistake is sometimes made of maintaining a hot, moist, growing atmosphere for the *Cattleyas* and *East Indian* and *Mexican Orchids*, thereby causing weak growth, and sometimes spots on the leaves, and various forms of ill-health in the plants, which if not observable at the time, make their appearance soon afterwards. It is better for the plants if a moderately low and even temperature be maintained until the sun gains power later on, and recuperates them naturally. The *Odontoglossums* of the cool-house feel the effects of artificial heat more than any other species, and much judgment is needed in maintaining the warmth from falling below 45°. Just before sunset, if the frost be severe, the temperature of this house may fall a few degrees below its proper standard, still no more heat should be turned on, otherwise when the house is covered for the night the warmth will be higher than is desirable. In this house many of the plants are showing flower-spikes, and a careful inspection of the plants by night for slugs and small snails will be very desirable, in view of the ravages done by these creatures. The *Masdevallias* must also be daily examined, slugs having a great liking for the young growths. If slugs abound, rare and valuable plants should be stood upon inverted pots placed in saucers filled with water, and even then the safety of the plants cannot be guaranteed, as slugs may be hiding amongst the growths or compost, hence the need for a daily examination of the plants.

Colax jugosus is an attractive plant, whose flower-spikes arise from the young growths at this season. When the plant is cultivated in the same house as *Odontoglossum crispum* it usually deteriorates, but if it be placed in the drier and slightly warmer *Masdevallia*-house during the winter, it keeps in good condition. From the time the flower-spikes appear on the plant it should be afforded water in abundance each time it becomes thoroughly dry, but not kept always saturated, or the black-spot will quickly disfigure the young leaves, and eventually cause the decay of the growths and flower-spikes. Repotting may be done after the spikes are removed, or the flowers fade.

Zygopetalum Clayii, a hybrid between *Z. maxillare* x *Z. crinitum*, requires a course of treatment iden-

tified with that which suits *Colax jugosus*; *Z. maxillare* may also be accommodated in the *Masdevallia*-house, or at the warmer part of the *Odontoglossum*-house. It is a species which is found growing in a state of nature on the stems of Tree Ferns, and if possible it should be fastened to a piece of the same, stood upright in a flower-pot, and made secure with a filling of crocks, &c. Now that the plant has begun to grow, it should be afforded water liberally.

The Cattleya-house.—The plants of *C. Trianae* now prominently showing their flower-buds in the sheaths should be more abundantly watered at the roots, and as the flowers open the quantity should be lessened by degrees, and the plants kept moderately dry till growth re-commences.

THE HARDY FRUIT GARDEN.

By H. W. WARD, Rayleigh, Essex.

Top-Dressing Orchards, &c.—Take advantage of frosty weather to wheel or cart manure on to orchards, and spread it evenly over the grass. In the spring a chain or bush harrow may be used to pulverise and scatter the manure and worm-casts. Good dressings of manure should also be wheeled on to fruit-tree quarters, where the distances at which the trees are planted admit of vegetable crops of various kinds, such as Potatoes, Cabbages, Lettuces, and Turnips being taken. This kind of work may be done when it is too cold to proceed with the mowing of wall trees. The manure should be dug or forked into the land as soon as the conditions are favourable; care being exercised not to dig deep enough to injure the roots of the trees, which should receive the same consideration. In the case of orchards generally, the necessity for annual or bi-annual top-dressing of the ground is too often overlooked. Crops of fruits are gathered, the grass is mown for fodder, and nothing is given back to the land to compensate for what has been extracted. This results in an impoverished state of the soil, and consequent poor crops upon the trees. Such circumstances occur even on farms or estates where a skilled and generous method of culture is afforded to cereal and root crops; yet were orchards treated with equal liberality, they would yield more profitable returns than either, taking one year with another. Rubbish-heaps which have been turned over once or twice during the last twelve or eighteen months make useful material for top-dressing orchards; but if good farm-yard manure be laid on to the thickness of 1 or 2 inches, this will be productive of better results. An occasional dressing of leaf-mould will prove advantageous to trees growing in stiff soil.

The Training of Wall Trees should be pushed forward during favourable weather, when the work can be comfortably and properly done. It may be done after the sun has shone forth in frosty weather, commencing on the south wall in the morning, and following the course of the sun to walls having south-west and westerly aspect. The men should retire to the packing-shed, or other suitable place, after the sun has gone down, where they may cut up shreds, and sort over old nails for using the following day, which work should be resumed in the morning until the sun shines forth. Thus, the handling of nails, shreds, branches, and hammer, may be performed with speed and precision by fingers untroubled by cold. The training of espalier-trees should also be proceeded with, leaving sufficient room on the ties to prevent them cutting into the branches as these become larger.

THE KITCHEN GARDEN.

By W. FOSB, Gardener, Highchere Castle, Newbury.

Mushrooms.—Fresh beds may now be made, to come into bearing early in the spring. There is always a little difficulty at the present season in getting the manure into a suitable condition, and I have found it advisable to add about a quarter of the whole of dry loam, and turn the heap two or three times at intervals, to mix it thoroughly. It should remain in a heap after the last time of mixing for one day before making it into a Mushroom-bed. The bed should be made in the usual manner, treading or beating it firmly together as the work proceeds. As soon as the heat has risen to 75°, the spawn may be inserted, and the bed soiled at once. The mixture of loam with the manure will prevent any excessive heat, arising in the bed, and the produce will be fleshier, and superior in quality than when manure only is used. If no convenience exists for Mushroom-growing indoors, a bed or beds may now be formed outside with every prospect of success. A dry spot must be chosen, and the material of which

to build the beds prepared by shaking it over, and separating the longest of the straw; then turn it over on alternate days for a week till thoroughly sweetened, when the bed may at once be made up in the form of a ridge, 3 feet wide at the base, and as much in height, beating the dung very firmly, and covering it when finished with a thick coat of litter, or with double mats, till the heat rises to the requisite height, when the spades should be inserted and 2 inches of soil put over the whole, and well beaten with a spade, again covering it thickly to retain the warmth and protect it from the weather.

Jerusalem Artichokes.—These tubers should now be lifted and sorted into sizes, the largest being laid by for use, and those of medium size and good shape reserved for planting. This may be done at once if the ground be in a workable condition. Soil of good depth and fairly rich, is necessary to ensure a good crop of tubers; and let the rows be 2½ feet to 3 feet apart, and the sets 18 inches apart. In addition to the usefulness of the roots as a vegetable, the tops may be made to form a screen to objectionable features during the summer season. The white is the best variety.

Mint and Thuyraon.—Roots should be lifted and planted in shallow boxes to afford a supply of shoots in the spring. Cover the roots with soil to a depth of 2 inches, afford water, and place in a temperature of 60° to 65°.

Potatoes for Planting.—All garden Potatoes reserved for planting should be spread out thinly on shelves or in shallow boxes. The early and second-early varieties will in most cases have begun to sprout, and if allowed to remain in heaps, or in a dark shed or cellar, they will deteriorate. Tubers for garden planting should be sprouted before they are planted, but the sprouts should be stout and sturdy, to ensure that they may be arranged in a single layer, placing them with the eye-end uppermost in a place where the light reaches them, and where frost cannot enter. Where Potatoes are grown in large quantities in fields, it is not possible to treat them in all this manner; still, these should now have the longer shoots removed if growth has commenced. Potatoes stored for consumption should be served in the same way, as if allowed to make a lot of long sprouts they are poor eating. Keep them as cool as is consistent with safety, and covered with straw or bast mats.

FRUITS UNDER GLASS.

By F. HARRIS, Gardener, Easton Castle, Leicestershire.

Succession Vines.—Such Vines, the forcing of which began about December 1, will now be breaking into growth, at which stage they do not require to be so heavily syringed, especially if the weather be sunless, much moisture at such times causing the points of the shoots and sometimes entire shoots to damp off. Where beds of fermenting materials are used in the vineries, it will be found beneficial to the Vines to turn the beds over occasionally to liberate the ammonia and moisture, thereby doing away with the necessity for much over-head syringing. Some gardeners may think this plan of using beds of fermenting materials old-fashioned, but it is not the less beneficial to the Vines, especially when these are aged, the roots breaking much stronger and the foliage coming stronger and healthier. I would, if stable-manure and labour were available, use these heaps in all our vineries, and I am sure, if the practice were common, instances of Vines eaten up with red-spider would be less often observed. As soon as the best growths are discernible, the weaker ones should be removed with finger-and-thumb, thus throwing the energies of the Vines into those intended to remain. All shoots carrying a bunch of Grapes should be stopped two joints beyond the bunch, the trellis being filled with the next break, thus causing the sap to be directed to the bunches. As the flowering period is approached, the atmospheric moisture should be gradually reduced, at the same time the night temperature raised to from 65° to 70°, with a corresponding rise by day. Afford a little ventilation whenever the conditions by day are favourable; gently tap the rods of freese-tittles every day about noon, and fertilise Muscats and other shy-setting sorts, by means of pollen carried from bunches of Black Hamburgs by means of a small box and a camel-hair pencil.

Late Vineries.—All Vines remaining unpruned to this date must now be pruned about delay, dressing every wound made with knife or saw with styptic, or painter's knotting, in case of bleeding later on. Wash the Vines with Gishurst

Compound soap, at the rate of not more than 4 ounces to the gallon of water; clean the wood-work, glass, &c., with soap-suds, and take off the surface-soil of the inside borders if sour and much compacted by trampling; give a dressing of good loam, to which has been added fair proportions of lime-rubble and soot, beating the whole firmly down with a steel fork. Lightly prick up borders not so treated, sprinkle over the surface a moderate dressing of Thomson's, Veitch's, or Wood's manure (all equally good). The borders may then be covered with a layer of stable-litter, so as to preserve a tidy appearance, and prevent the soil being carried on to the paths, &c. Afford warm water copiously to the borders, preparatory to starting the Vines next month.

Carefully examine bottled Grapes for bad berries, for my experience is that they are keeping very badly this season.

Succession Peach and Nectarine-houses.—The buds on trees which were started about January 1, and now expanding, should be afforded fumigation with tobacco to kill aphids. Overhead syringings should be discontinued as soon as the flowers begin to open; a moderate drenching underneath on fine days being found sufficient during the period of flowering. Another house may now be started if a constant supply of fruit be required. The pruning of the trees in later houses should now be carried out without further delay, and the trees washed, and fastened to the trellises. The later houses should be kept as cool as possible, closing them only during very severe frosts or high winds. If the trees are infested with scale, the XL All plant-wash will be found a capital dressing for them, and should be applied with soft brushes, using it in a very weak solution on the younger wood. I used it last year on some scale-infested trees in a cold house, which were but little troubled with scale afterwards. On pruning these trees the other day I was pleased to find scarcely a trace of the insects on them. Keep the borders in late houses regularly watered; drought at this season being a common cause of buds dropping later on.

PLANTS UNDER GLASS.

By G. H. MAYCOCK, Gardener, Luton Hoag, Luton.

Camellias.—Attention should be given at this season to plants of the Camellia trained on the walls of the greenhouse and conservatory, sponging the leaves if they are infested with the black fungus with some soap-suds, in which a little flowers-of-sulphur have been dissolved; or if scale infests them, with an insecticide. When the leaves of the Camellia are merely dusty, it is sufficient to rub them with a soft, dry cloth. If the foliage has an unhealthy appearance, the drainage may require looking to, and in any case a surfacing of fresh soil, consisting of loam, peat, leaf-mould, and soot, will be required, after removing the upper-crust down to the roots. Borders containing aged plants being filled with roots, are benefited with doses of liquid-manure containing a small quantity of soot. If there are thrips on the plants, use XL All vapour for several nights in succession.

Fuchsias.—Large aged plants must not be allowed to become very dry at the root, or many of the roots will perish; and at this season such plants should be hard-pruned, and put on one side, previous to starting them in warmth next month.

Sericocarpus (Jacobinia) Gheisbreghtiana.—Any plants which may have passed out of flower should be cut back, and a reduced quantity of water afforded. When the plant starts to grow again, and short-jointed cuttings can be obtained, propagation may take place. Strike the cuttings in bottom-heat of 80°, and pot-off as soon as they are rooted, using 60's, and a mixture of one part of loam, one of leaf-mould, and one of sharp sand. When established, harden them in off and keep them in a cold frame during the summer months.

Centropogon Lucyanus.—This plant should have its leading shoots shortened back, and cuttings with a heel taken as soon as the shoots are about 3 inches long. These strike in a mixture of leaf-mould and sand in slight bottom-heat under handlights, and should be potted-off when rooted. They do best in the stove during the spring months. When shifting them into their flowering-pots, say 6-inch ones, a mixture of half peat, one quarter loam, one quarter leaf-mould, with plenty of sharp clean sand and charcoal, should be employed. In the warmest part of the year, the plant does well in an ordinary garden frame, and in September it should be removed to the intermediate-house. Aged examples of these plants make good material wherewith to fill baskets to be hung in the stove when in flower.

Bonvardias.—Plants which were pruned hard during the flowering season will now be past their best, and attention should be directed to obtaining a sufficient number of healthy cuttings in the course of the next month. After shortening back the growths and clearing the plants of scale, place them on a shelf close to the glass, in a house having a temperature of 55° to 60°, affording less water at the root. The roots afford a means of propagating the plants by cutting them into small pieces, and placing them in pans of sandy soil in heat.

The Forcing-house.—Continue to place fresh batches of bulbs and plants in the house at intervals, using the precautions advised in a previous Calendar.

THE APIARY.

By EXPERT.

Honey as Food.—In a recent issue of the *American Bee Journal*, Professor Cook, a great authority on the scientific side of bee-keeping, contributes an excellent article on "Honey as Food," in the course of which he says, after referring to the necessary constituents of a perfect food, the inorganic elements, like water, salt, phosphate, carbonate of lime, &c., the non-nitrogenous organic containing oxygen, hydrogen, and carbon, illustrated in starch, the various sugars, and the fats, says, "The digestion of food is simply to render it osmotic, or capable of being taken through an organic membrane capable of being absorbed." We eat starch; it is non-osmotic, and would lie in the stomach and intestines indefinitely, except that by digestion it is changed to a glucose-like sugar by the action of the liver, which is very osmotic, and so absorbed from the alimentary canal into the blood. Cane-sugar, though somewhat osmotic, is not readily absorbed, nor is it readily assimilated, even though it pass into the blood; thus cane-sugar must be digested or changed into a glucose-like sugar. Bees gather nectar from the flowers, and as they seize it or draw it from the flowers, they mingle with it a kind of saliva or ferment from their upper head gland and the large glands of the thorax, and thus transform it into honey, which contains almost exclusively a reducing sugar, and not cane-sugar. Thus bees do to nectar what we do to cane-sugar—they transform it into a more osmotic and more assimilable glucose-like sugar. We call this in our case digestion of the cane-sugar, and it is just the same when the bees do it. If any one prefers, he may call it transformation. In any case, it makes honey a safer food than cane-sugar, and we do well to eat it more generally, and it is especially desirable as food for children.

Children should be given all the honey at each meal-time they will eat. It is safer; will do away with the inordinate longing for candy and other sweets, and, in lessening the desire, will doubtless diminish the amount of cane-sugar eaten. Thus, if cane-sugar does work mischief with health, the harm may be prevented. There can be no doubt that in eating honey our digestive machinery is saved work that it would have to perform if we ate cane-sugar; and in case it is overworked and feeble, this may be just the respite that will save from a breakdown. Again, if cane-sugar is absorbed without change, it will be removed by the kidneys, and may result in their breakdown, and so physicians may be correct in asserting that the large consumption of cane-sugar by the nineteenth-century man is harmful to the great eliminators, the kidneys, and so a menace to health and long life. It may be urged in reply to the above that honey is a poison to many. This is not the sugar of the honey, but some other element; very likely the formic acid, or perhaps the extract of the flowers. It seems more likely that the deleterious element is the formic acid added to the sweet by the bee. This keeps the honey from fermentation, and is not harmful to many—only occasionally a person is unable to eat it.

Snow.—Keep all snow clear of the entrances to hives—this is very essential, more particularly at this time of year; and replace candy where required.

ORIGIN OF MAIZE.—Some few years since, the late Dr. SERENO WATSON received from Mexico several plants of Maize, of which the seedlings were examined by the Professor, and by him named *Zea canina*. According to the account given by Dr. HARRIS in a recent number of *Garden and Forest*, this plant originated as an accidental cross between the cultivated Maize and "Teosinte," or *Echinochloa mexicana*. It is further surmised that Maize may have originated by hybridisation in this way.

EDITORIAL NOTICES.

ADVERTISEMENTS should be sent to the PUBLISHER.

Local News.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

Newspapers.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

APPOINTMENTS FOR THE ENSUING WEEK.

THURSDAY,	FEB. 4	{ Linnean Society meet. Ayrshire Gardeners' Society meet.
SATURDAY,	FEB. 6	{ Soc. Franc d'Hort. de Londres meet Isle of Wight Hort. Society meet. Chester Faxon Society meet.

SALES.

		{ Tuberoses, Spireas, Roses Gladiol. Greenhouse Ferns, at Protheroe & Morris' Rooms.
MONDAY,	FEB. 1	{ English and Foreign Border Plants, Bulbs, Liliums, without reserve, at Stevens' Rooms.
TUESDAY,	FEB. 2	{ Carnations, Montbretias, Prens- nals, &c., at Protheroe & Morris' Rooms.
WEDNESDAY	FEB. 3	{ Japanese Lilies, Continental Plants, Lily of the Valley Crowns, Tubero- ses, &c., at Protheroe & Morris' Rooms. 2000 Choice Roses, Fruit Trees, Shrubs, Border Plants, Liliums, &c., at Stevens' Rooms.
THURSDAY,	FEB. 4	{ Hardy Perennials, Peonies, Dwarf Roses, &c., at Protheroe & Morris' Rooms. Japanese Liliums, Bulbs, Border Plants, at Stevens' Rooms.
FRIDAY,	FEB. 5	{ Imported and Established Orchids at Protheroe & Morris' Rooms. Scientific and Miscellaneous Effects, at Stevens' Rooms.

AVERAGE TEMPERATURE for the ENSUING WEEK, deduced from Observations of Forty-three years, at Chiswick.—59° 2°.

ACTUAL TEMPERATURES:—

LONDON.—January 27: Max., 41°; Min., 29°.

PROVINCES, January 27 (6 P.M.): Max., 41°; Valencia,
Mil., 32°; Aberdeen.

The Report of the Royal Horticultural Society, reprinted in our last issue, must be considered on the whole as a very satisfactory document. It shows that good work is being done; and good management is also obvious. It is gratifying to learn that the renovations at Chiswick, which have been in hand so long, are at length completed; and eminently satisfactory to know that the Council have every reason to congratulate themselves on the selection they made to fill the office of garden-superintendent vacated by Mr. BARRON. What is now wanted is to make Chiswick more useful than it is to the gardening public. The trials carried out there are only of limited value, and as a rule add little or nothing to horticultural knowledge, and contribute as little to its progress. They show that, under circumstances as they exist at Chiswick in a particular season, one variety may be better than another, but what is the cause of that diversity is not considered, nor is any hint given in what directions we may look for future progress—hints such as the observations of the plants during growth should assuredly supply. A standard collection of the best and most suitable varieties of flowers, fruits and vegetables, should be kept for the purposes of identification and comparison by gardeners. From these collections inferior sorts, unless in some way of special interest, should be eliminated. In all possible ways, Chiswick should be made a model garden, where the visitor might be sure to see all novelties, and the most approved methods of gardening carried out in all departments so far as circumstances permit.

We regret to have to renew our protest that no effort was made last year to secure the attendance at Chiswick of the Fellows at stated times, or even of the members of the several committees as a whole. This year again the Council takes no pains to bring the Fellows to a garden on which they have expended within the year £1870, or, with the necessary reductions, £1500. Of course, any Fellow can go any day he chooses, and some, perhaps, do; but the bulk of the Fellows are not likely to go unless for some special purposes.

We throw out for consideration a proposal that a combined meeting of all the committees be held in the garden during the coming summer. The purpose of this meeting should be to discuss subjects of common interest to all the committees, such, for instance, as the preposterous number of awards to which the Council very properly draw attention, the revision of the rules of judging, the selection of new members for the ensuing year, the relation of the committees to the council, the course of action to be recommended to the council, and other matters of that kind as the circumstances of the time may suggest or render necessary. The formal business meeting over, an adjournment might be made to the trial grounds and to the various house, and if some of the fellows felt disposed to take luncheon after their labours, means should be taken to satisfy their requirements! Doubtless, under these circumstances, many Fellows who are not members of the committees would be found willing to visit the garden on "inspection day." In any case, let us get to Chiswick and have the opportunity to see and hear what is going on. The Temple Show and the Fruit Show at the Crystal Palace afford opportunities for Fellows and gardeners to meet, but their time is naturally taken up with the shows themselves, and neither the Temple nor the Crystal Palace is Chiswick.

The visits of the Society to some of the great provincial centres seem to have given satisfaction, and indeed anything which is calculated to widen and deepen the influence of the Society in the provinces must be beneficial.

Mr. SHERWOOD's generous offer of a scholarship of £25 for two years in connection with the Society's examination in horticulture is most encouraging, and no doubt it will be confined to actual gardeners, or to those intending to follow gardening as a means of livelihood, else some well trained pupil-teacher or schoolmaster would run off with a prize presumably intended for gardeners only. Indeed, this is one weak point in the present scheme of examinations. Anyone within the limitations of age may enter for the examinations, and in consequence we have boys, and men, and girls, policemen and shoemakers, and we know not who besides, competing one against the other, and with gardeners, amateur or professional. Still more unfair is it that lads from a garden-bothy miles away from a town, or from any centre where they can get instruction, should be obliged to compete with students from Chelmsford, who have an excellent training, and those from Swanley or other colleges.

Last in order among the paragraphs of the Report is one relating to the proposals for duly celebrating the diamond jubilee of the QUEEN'S reign. Various proposals, it appears, have been made, and at length the Council, with at least the tacit assent of Her Majesty, have decided to strike a special medal or medallion, to be called the Victoria Medal of Horticulture, to be awarded "honoris causa" in the domain of horti-

culture." If the recipients be carefully selected, and not too numerous, this should be a coveted distinction. It is one which many have rendered themselves entitled to by years of honorary service to the Society, and through it to horticulture. Up to the present, the Society has left it to certain independent "memorial" trustees to award distinctions which would more suitably come from the Society, and even the Lindley Medal for good cultivation has not been awarded for years.

THE additions that have during the past few years been made to our already very extensive list of edible Peas, have most largely been to the medium tall section, which is perhaps the most generally acceptable section cultivated. Varieties that range from 2 feet to 3½ feet in height, are excellent for all descriptions of culture. Grown in fields for market picking they are of moderate height, the internodes being short, growth sturdy, and the pods freely produced. When grown in the richest of garden soil and staked, they pad low down, and also to the very top, and there is not the waste, ordinarily of 3 feet, of barren growth which is usually found on tall Peas. So good, too, have been the varieties recently introduced, that all round hard Peas are practically eliminated from lists except for very early purposes in fields; for in gardens the dwarf wrinkled first earlies now have the primary place. It is sometimes remarked that modern Peas have less flavour than was found in the old marrows, such as British Queen, Ne plus Ultra, &c. But much depends who her flavour be confounded with sweetness, for some of the old marrows were rich in sugar, and by many persons regarded as far too sweet. If the more modern Peas be less sugary, that can hardly be termed loss, as there is with many excellent flavour; also with these as with Potatoes, flavour is often through condiments, an added quantity. But whilst such advantages or disadvantages can be claimed for modern Peas, there can be absolutely no doubt but that in the matter of productiveness great advance has been made. It is not merely in the length and in the number of pods that we see this, but where cultivation is even fair, it is seen that these long pods fill well; so that when the best of all tests of productiveness is applied, that of the shelled quantity, it is found that Pea produce is as remarkable as is that of pod. Pea production in the form of new varieties, apart altogether from the stimulus given to it by competitions, has naturally been in the direction of fine pod production, and so long as these pods have been well filled, with not large, but good, soft, succulent Peas, and abundantly set on the plants, there has been great gain. Of that there can be no doubt whatever. Last summer some twenty-five varieties of dwarf or medium height Peas were grown in Surrey, in both light and porous soil, and in stiff loam. In one case the plants were staked, in the other subjected to ordinary field treatment. All were wrinkled Peas with one exception: Princess Royal, once a favourite, second early marrow, grown in this case with Prince of Wales, and one or two other old sorts, to test the merits of the newer ones. In both cases the seed was sown thinly, much more thinly than is the rule in gardens, though not in fields; and one good result was that in spite of the prolonged heat and drought, all did well, and gave capital crops. It is surprising how Peas thinly sown, especially the robust marrows, will

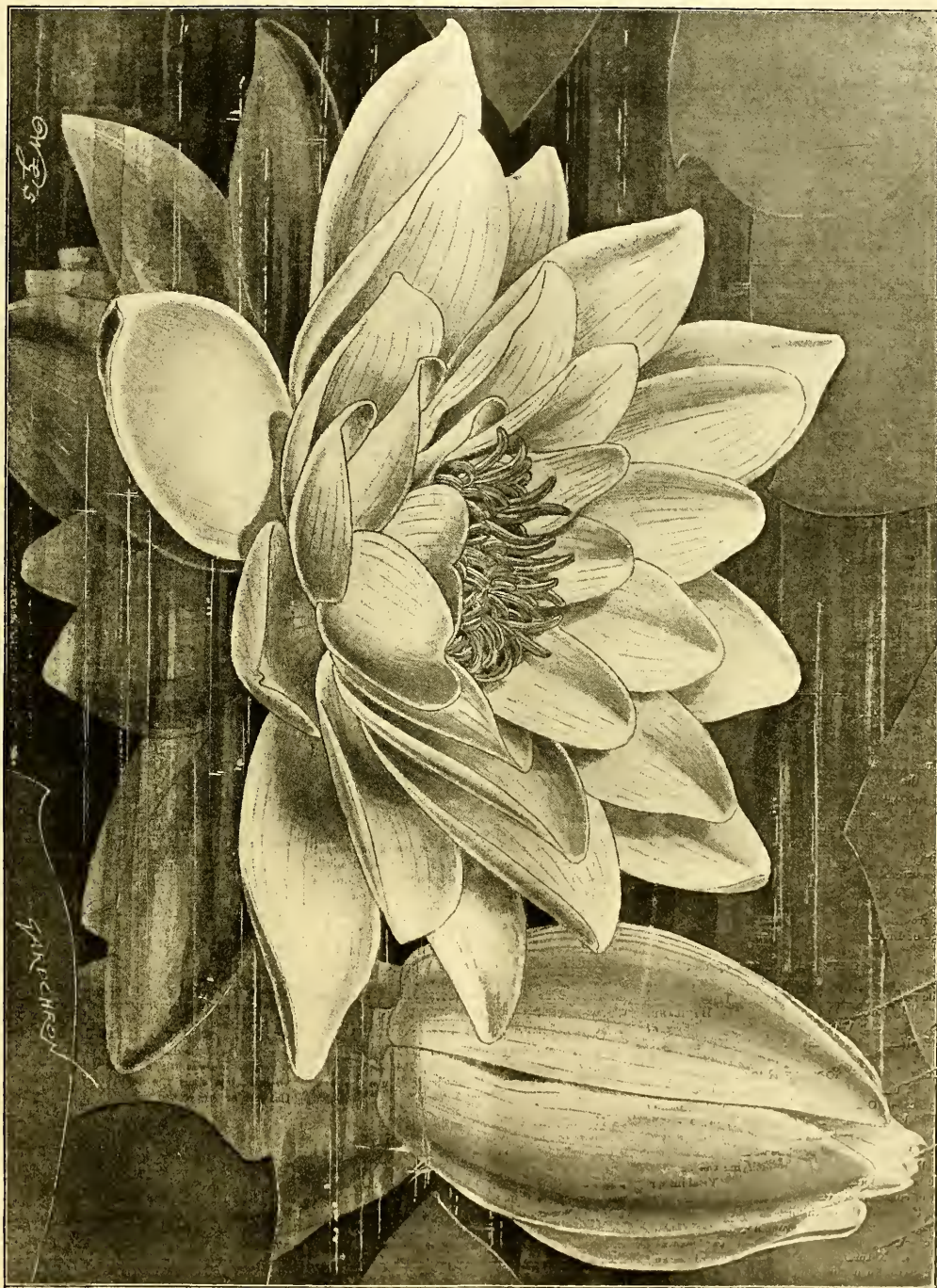


FIG. 21.—*NYMPHEA VARIOSA* VAR. *ALBA*: FLOWERS SNOW-WHITE. (SEE P. 78.)

make side-shoots, and more than compensate for thinness of plants. The laid Peas in the stiff loam, judged by ripe seed production, gave rather the best results; but on the light dry soil the results were more than satisfactory, and none that is classed as first early was sown—but all were of mid-season, and late cropping varieties, the object being to manifest to the surrounding allotment-holders the value of new varieties such as grown, over those in common use, or which run unduly tall. Of these latter the failures to secure crops during the past summer were many; indeed, they would succeed only where there were great depth of soil and ample manure, and abundant waterings were furnished up till at least the month of August. Selections were made of the leading varieties of four prominent seedsmen, and in the result in each case certain selected ones were specially the best, though all were relatively very good. The best two varieties under 24 inches were The Daisy and Dwarf Defiance, both first-rate second early for small gardens and allotments. Of those rather taller, a remarkably prolific early one was Senator. This variety attracted great notice, because of its excellent cropping powers, and though not so large as some others, yet it had well-filled pods. Stratagem, Sharpe's Queen, Promotion, Shropshire Hero, Enterprise, Invincible, and Magnum Bonum, the latter having the finest pods, were all first-rate, and seem worthy of wide acceptance, though most of them are largely grown now. Two very superior Peas of medium height grown at Chiswick, and certificated later at the Drill Hall, are Boston Unrivalled, and the Gladstone, the latter apparently a specially superior late variety. Others good later on are Antocrat, regarded as one of the best; and Late Queen. It is thus evident that in the section referred to, we have many excellent varieties.

HYBRID NYPHÆAS.—The illustration (fig. 21) at p. 17 shows another of the fine race of hardy Water Lilies which we owe to the patience and skill of M. LATOUR-MARLAC. In some respects it is the finest of all, the leaves having a diameter of 12 inches. They are olive-green, and destitute of the purplish spots which occur in other varieties. The flowers are pure white. Like the other varieties, this is perfectly hardy, so that it forms a magnificent addition to our gardens. Unfortunately, we do not know the precise origin of these fine varieties, but the ordinary cultivator will think their beauty outweighs all other considerations. Our illustration was taken from a plant growing in a pond at Gunnersbury under the charge of Mr. HUNSON.

LINNEAN SOCIETY.—At an evening meeting to be held on Thursday, February 4, at 8 P.M., papers will be read:—1, "A Revision of the Tribe *Nauclea* (Nat. Ord. Rubiaceae)," by Dr. G. D. HAVILAND, F.L.S.; and, 2, "A Contribution to the History of New Zealand Echinoderms," by W. H. FARQUHAR.

EDINBURGH SCHOOL OF RURAL ECONOMY.—Mr. D. T. FISK is delivering a course of lectures on "Landscape Gardening" at the Royal Botanic Garden, Edinburgh. The following syllabus shows how the lecturer treats his subject:—The object and scope of the science and practice of landscape gardening. Dressing, keeping, and beautifying the surface. Choice and conformation of ground line. Vital importance of considerable variety and sufficient depth of soil. Preparing the earth for its great artistic work. Drainage, enrichment, sub-cropping, &c. Forms of landscapes. Formal or geometrical gardens and demesnes. Natural, English, or mixed gardens and landscapes. Furnishing and planting of landscapes. Times, methods, materials. Filling in neutrals with Oaks, Beeches, and other trees. Lighting up landscapes

with flowering trees. Planting in shadows with Conifers. Fringing landscapes with flowering shrubs and plants. The "Rosarising" of landscapes. The decoration and beautifying of our cities and homes.

ESSEX SCHOOL OF HORTICULTURE.—The *Journal of the Essex Technical Laboratories* (Chelmsford) announces that an advanced course of instruction will be given at the County School of Horticulture during the first three weeks of February; and that a piece of land 3 acres in extent has been secured near Chelmsford for the establishment of a botanic and demonstration garden.

THE NATIONAL AGRICULTURAL UNION is determined to impress upon its Parliamentary representatives the urgent necessity for a new clause in the Finance Act, to abolish the injustice of the Land Tax assessment. In many instances the Land Tax, instead of being diminished by the Finance Act of last year, as it was expected, has been increased. By means of the official organ of the Union, evidence is being collected on the subject, which in due course will be laid before Parliament.

ANTWERP ROYAL HORTICULTURAL AND AGRICULTURAL SOCIETY.—This society, founded in 1825, and which hitherto has organised 165 exhibitions, has lately become incorporated with the Antwerp Royal Zoological Society. Large buildings are to be constructed in the gardens of the latter, to include a *salle des fêtes*, winter-garden, museum, conference hall, and refreshment rooms. The horticultural shows will henceforth be held in the Zoological Society's Hall, the first fixture being July 31 next. Conferences on Zoology and Horticulture will be held at intervals under the auspices of the two Antwerp societies, now so happily amalgamated. *Ch. De B.*

AMSTERDAM.—A Chrysanthemum Club has been established in this city on the lines of the National Chrysanthemum Society.

GENEVA EXHIBITION.—*Prix d'Honneur* have been awarded to various firms for market-garden produce; to MM. Froebel of Zurich, Boccard and Thibaud of Geneva, for ornamental trees and shrubs; to M. Vachoux, for Roses; to M. Boccard, for cut Roses; to Messrs. Froebel, for new plants and stove plants; to Messrs. Vachoux, for greenhouse plants; to M. Pillet, for bulbous plants; to M. Corveon, for hardy herbaceous plants—the same gentleman also received a prize for horticultural literature and instruction.

SWEET PEAS.—The *Florists' Exchange* for Jan. 2 gives a series of outlines showing the average size and form of the standard in twelve of Eckford's newer varieties. The largest diameter is 38 millimetres (1½ inch about). In form the standard is flat or involute on one or other or on both margins. The notch at the apex varies in depth, and the short stalk at the base is equally variable.

AT HAYWARD'S HEATH, on the 22nd inst., it was decided to hold a Chrysanthemum show there during the coming autumn. It will be promoted by members of the Horticultural Society, but the accounts are to be kept separate.

CHISWICK GARDENERS' ASSOCIATION.—At the usual fortnightly meeting of this body, held on the 21st inst., Mr. S. T. WIGNOT, President, in the chair, Mr. J. HUNSON, Gunnersbury House Gardens, read a paper on "Apples and Pears."

NATIONAL CHRYSANTHEMUM SOCIETY.—A meeting of the general committee was held at Audertou's Hotel on the 25th inst., Mr. B. WYNN presiding; after the transaction of some formal business, the following resolution was unanimously passed:—"The Committee of the National Chrysanthemum Society desire to place on record their sense of the loss sustained by the society through the death at Forest Hill of Mr. W. PIERCE, a well-known member, and an exhibitor at the shows of the society. They bear in grateful remembrance his constant endeavours to improve and popularise the section of early-flowering varieties, and the useful additions he

made to the section from time to time." A letter was read from Mr. J. W. WILKINSON, the secretary of the Royal Aquarium Company, stating that the directors would give the same amount of money to each of the four exhibitions as in 1895, and confirming the selected dates of the same. Mr. C. HARRMAN PATNE, the foreign corresponding secretary, laid upon the table the large Gold Medal awarded to the National Chrysanthemum Society by the Agricultural and Horticultural Society of Ghent in November last for a collection of cut blooms of English growth taken over by the deputation, and also the official Certificate of Merit, awarded to a fine bloom of Madame Carnot, in the collection. A report from the Special Classification Committee of Growers was then read by the Secretary, and after some discussion it was unanimously passed, and a hearty vote of thanks was given to the committee for their services. The judges nominated by the schedule sub-committee to make the awards were, with one or two exceptions, elected. Eleven candidates for membership were elected, including three Fellows; and the Dorking and district Chrysanthemum Society was admitted to affiliation.

A MEMBERS' DINNER of the Hartlepool and District Gardeners' Mutual Improvement Society was held at West Hartlepool on the 20th inst. About forty persons were present, and the event, which is the first one the Society has celebrated, was presided over by His Worship the MAYOR. The Society is doing considerable service to horticulture in the district, by affording means for the interchange of ideas and practices among its members.

ILEX LATIFOLIA.—From Kilmacurragh we receive specimens of *Ilex latifolia* in berry. It is a fine Holly, which might pardonably be passed over as a Cherry Laurel or a green Aucuba. The globose berries are like those of the common Holly, but smaller and paler in colour.

MR. HUGH FRASER.—The *Edinburgh Evening Dispatch* publishes a photograph of Mr. HUGH FRASER, who is about to retire from the service of Messrs. MATHYEN & SONS, nurserymen, through failing health. Mr. FRASER has been with this firm during the last forty-eight years, and as a member of the Edinburgh Naturalist's Field Club and Microscopical Society, the Edinburgh Botanical Society, and the Scottish Horticultural Association, is widely known and respected. He is the author of a book upon Conifers and Rhododendrons, published by Messrs. BLACKWOOD & SONS, and has frequently contributed horticultural articles to scientific and popular magazines.

THE LOUGHBOROUGH AND DISTRICT GARDENERS' MUTUAL IMPROVEMENT ASSOCIATION held their fortnightly meeting in the Co-operative Rooms, Woodgate, on Tuesday evening, the 19th inst. Mr. A. HAMSHER of Beau Manor Gardens, occupied the chair. The subject-matter for the evening was Mr. POWELL'S "Notes on the Deciduous *Dendrobium*," the cultivation of which was detailed in a lucid manner. The essayist brought the following species to the meeting, viz.:—*Dendrobium nobile*, *D. nobilifolium*, *D. Leechianum*, *D. Wardianum*, *D. Cooksoni*, *D. Ainsworthii*, and *D. splendissimum*, thus adding much interest to his remarks. Quorn Lodge was long celebrated for its collection of Orchids, but since the death of the late Mr. HOPE, the greater part of the collection has been dispersed; only a few varieties, which are of use as cut flowers, &c., being retained.

ISLE OF WIGHT CHRYSANTHEMUM SOCIETY.—The annual meeting of the Isle of Wight Chrysanthemum Society was held at Newport, on Saturday, January 16, 1897. The financial statement showed the Society to have commenced the past year with £23 9s. 6d. The total takings at the last show amounted to £30 7s. 5d., which with donations and subscriptions brought the total receipts up to £93 11s. 4d. The balance remaining for next year is £22 7s. In the election of officers, Sir CHARLES SEELY, Bart., was re-elected President; Dr. GROVES,

E.A., J.P., Chairman; Dr. M. L. B. COOMBS, Treasurer; and Mr. J. TAYLOR, Assistant-Secretary. Votes of thanks were passed to all those who in any way rendered assistance at the last show.

THE RAINFALL AT ROTHAMSTED FOR THE YEAR 1896 WAS AS FOLLOWS:—

Month.	Rainfall in 1896.		1896, more (+) or less (-) than average.
	Inches.	Average Rainfall 40 years.	
January	1.12	2.45	- 1.33
February	0.59	1.74	- 1.15
March	3.75	1.73	+ 2.02
April	0.95	1.97	- 1.02
May	0.48	2.93	- 1.85
June	2.25	2.41	- 0.16
July	1.27	2.73	- 1.46
August	2.91	2.60	+ 0.31
September	8.08	2.55	+ 5.53
October	4.18	3.19	+ 0.94
November	1.39	2.77	- 1.38
December	4.42	2.17	+ 2.25
Total 12 months ...	31.84	28.61	+ 2.70

The total rainfall for the twelve months of 1896, writes Mr. J. J. WILLIS, amounted, according to the gauge of Sir J. B. LAWS at Rothamsted, Hertfordshire, to 31.84 inches. This is 2.7 inches, or nearly 273 tons of water per acre, in excess of the average rainfall extending over a period of forty years. The foregoing data shows that seven months of the year gave less than the average rainfall, whilst the four months of March, September, October, and December, gave a total of more than 20 inches of rain, equal to about two-thirds of the year's fall. The rainfall of 1896 was very similar in quantity to that of 1894, but was very differently distributed over the various months.

UNIVERSITY OF DUBLIN.—The Provost and Senior Fellows of Trinity College, Dublin, have directed that Dr. EDWARD PERCIVAL WRIGHT shall continue to hold the Professorship of Botany in the University of Dublin for another term of seven years, from May 10, 1897. *Irish Times.*

GARDENING AS A REMEDIAL AGENT.—One of the saddest afflictions that befalls humanity, and one of the most trying to the friends and bystanders, is epilepsy. The uncertainties and dangers attaching to it, the frequent absence of all warning, to say nothing of other details which would be out of place here, too often render the sufferer incapable of continuous work. If not so incapacitated, he has, not unnaturally, very great difficulty in procuring employment, or it may be is absolutely unable to do so. And yet open air exercise and healthy garden or field-labour are among the most valued means known to physicians of mitigating the disease. With this view, some descendants of the good Samaritan have established a National Society for the employment of epileptics, and a "colony" for the reception of such as are thus afflicted has been founded at Chalfont in Buckinghamshire. Here important work is being carried on, and here, as we are authoritatively informed, the physicians are meeting with success. Gardening operations of various kinds occupy a large share in the treatment, on which account the subjoined letter from the secretary may interest many of our readers:—

"It may probably interest your readers to know that the 'Colony' recently established at Chalfont St. Peter, Bucks, for the employment of epileptics in gardening, farming, and other occupations, has already proved a great success, and is being very rapidly developed. The 'colonists' live in detached homes, each containing eighteen to twenty-four inmates, and several new houses will be erected in the course of this year. Everything that adds to the brightness and attractiveness of the surroundings increases the happiness of the colonists, and indirectly tends to the improvement of their health. Round each of the homes, therefore, will be a small flower garden, and gifts of trees or shrubs would be highly appreciated. Perhaps I may also mention another gift that would be much valued by the colonists, namely, an old waggone or other vehicle in which, on holidays, they might be taken for drives, and

enabled to see something of the very beautiful country that surrounds the colony. Gifts such as these mentioned, or any others that could be utilised upon farm or garden, should be addressed to the Bailiff, The Colony, Chalfont St. Peter (Chalfont Road Station), and would be most gratefully received and acknowledged. "I am, &c., "G. FENN GANKELL, "Secretary."

"National Society for Employment of Epileptics," "12, Buckingham Street, Strand, W.C."

THE TRADE OF 1896.—The well-being of the community is so bound up with its foreign and colonial trade, that no excuse need be pleaded for a brief survey of last year's imports and exports, to which once a month for years past the attention of the reader has been directed under the heading of "Stock-taking." Some idea of the vastness of the interests involved may be formed from the fact that, together, last year's imports and exports were valued at £681,729,544, as against £642,579,674 in 1895, or an increase for the past year of some £39,149,870. The figures are enough to take one's breath away. The past year's imports, as will be seen, are placed at £411,807,335, as against £416,689,658, showing a gain of £25,117,677, or over two millions sterling a month. The following figures are those which principally concern us here—taken from the summary table:—

IMPORTS FOR THE YEAR.	1895.		1896.		Difference.
	£	£	£	£	
Total value ...	416,689,658	411,807,335	411,807,335	+25,117,677	
(A.) Articles of food and drink—duty free	140,242,870	143,301,708	143,301,708	+6,058,829	
(B.) Articles of food and drink—duty	25,658,700	25,693,706	25,693,706	+635,006	
Raw materials for textile manufactures	79,769,681	74,766,939	74,766,939	+3,996,355	
Raw materials for sundry industries and manufactures	14,024,507	47,240,940	47,240,940	+3,216,343	
(A.) Miscellaneous articles	14,967,541	15,036,432	15,036,432	+668,891	
(B.) Parcel Post	978,101	1,012,348	1,012,348	+34,157	

Looking over the mass of figures in the section devoted to articles of food—duty free, we learn that the total imports of butter from foreign countries and various colonies footed up at £15,544,083 in value; cheese at £4,900,428; eggs at £4,184,567; poultry and game were entered to the amount of £605,458. The value of fruits imported, including Oranges and Lemons, is placed at £25,540,069; but the following little table will be somewhat more explanatory—it gives for the year what we record month by month:—

IMPORTS FOR THE YEAR.	1895.	1896.	Difference.
FRUITS, RAW:—			
Apples bush.	3,292,262	6,177,192	+2,884,930
Cherries "	19,632	219,367	+2,375,735
Plums "	401,080	560,246	+159,166
Pears "	407,146	483,823	+76,677
Grapes "	865,287	883,254	+17,967
Unenumerated "	1,249,563	1,427,105	+177,542
Onions "	5,734,768	6,685,500	+950,732
Potatoes cwt.	3,758,159	2,244,627	-1,513,532
Vegetables, RAW, unenumerated value	£1,377,296	£1,284,634	-£92,662

The value of articles of food, dutiable and duty-free, is, as will be seen, £171,995,414—a very large proportion of the total imports, and full of encouragement to those who maintain that it is possible to retain at home much of the money sent out of it for foreign provisions. As to—

EXPORTS.

the total for last year is £239,922,269, as compared with £225,800,016 in the preceding year—showing an increase of £14,032,193—an amount which, without doubt, would have been doubled had politics been less prominent in many parts of the world. The gain in metals and articles manufactured therefrom, except machinery, increased by £1,686,345; articles manufactured, and partly so, viz., yarns and textile fabrics, increased by £3,976,277; machinery

and millwork have had a gain of £1,886,377. It is worthy of note that apparel and articles of personal use put on £1,166,215 extra. But no more examples need be quoted as to the soundness of the export trade in articles of British and Irish manufacture. In all of the above there is, we submit, a lesson for all the world—foreign and colonial—that furnished by free trade; herein is to be found the greatest good for the greatest number—here, more than elsewhere, can the best man win.

ISLE OF WIGHT HORTICULTURAL IMPROVEMENT ASSOCIATION.—A special meeting of this Association was held at Newport on Saturday last. Dr. GROVES (Chairman of the Association) presided over a very good attendance of members. A unanimous vote of thanks was accorded C. L. CONACHER, Esq., the new manager of the Isle of Wight Central Railway, for his efforts in assisting the Association in the promotion of agriculture and gardening, the principal industries of the island, by reducing the rates of carriage of garden and farm produce to London and other places on the mainland. It was also resolved that the association should be affiliated with the Royal Horticultural Society. A sub-committee was appointed to draw up a scheme for the re-organisation of the association. By the combined efforts of the market-gardeners in the island, and the members of the above association, much good can be done towards developing its horticultural and agricultural industries.

GINKGO BILOBA.—A Japanese botanist—Dr. HERASE of the Botanical Institute, Tokio—claims to have discovered spermatozoids in this plant; and another professor at the same University professes to have found similar bodies in *Cycas revoluta*. If these very remarkable discoveries are confirmed, an important link between the Conifers and the higher Cryptogams will have been brought to light; but for the present, it is safe to await the confirmation of these researches.

NEW PUBLICATIONS.—*The Forester* (PRINCETON, N. Jersey), which now becomes a monthly journal, under the editorship of Mr. JOHN GIFFORD.—*A Manual and Dictionary of Flowering Plants and Ferns*, by J. C. WILLIS, M.A., Director of the Royal Botanic Garden, Ceylon (CLAY & SONS, Cambridge Univ. Press Warehouse, Ave Maria Lane).—*Fruit Culture for Amateurs*, by S. T. WRIGHT (L. URCOTT GILL).—*Diseases of Plants induced by Cryptogamic Parasites*, by DR. KARL FERREHNER VON TUEBEUF; English edition by WILLIAM G. SMITH, Ph.D. (LONGMANS).—*An Illustrated Flora of the Northern United States, Canada, and the British Possessions*, by N. L. BRITTON, Ph.D. & HED. ADDISON BROWN (New York: SCRIBNERS).—*British Moss Flora*, Part xviii., by R. BRATHWAITE, M.D. (303, Clapham Road).

HOLME LACEY, HEREFORD-SHIRE.

THIS, the seat of R. Oliverson, Esq., is a fine old place, standing amidst beautiful scenery, and renowned for its extensive bedding-out. About 50,000 plants are annually displayed, and through the generosity of Mr. Oliverson, the public are privileged to visit his beautiful gardens. The mansion is about half a mile from Holme Lacey station, and for nearly the whole distance finely-kept Holly hedges line either side the road. Next to strike the eye are massive Yew hedges in perfect health, and clipped to perfection; and the Yew trees are cut annually by that very useful implement, the French pruner, and pruned and clipped into a variety of forms, some quite novel. There are, too, some fine Coufers to be seen.

Just now in the hall are some excellent groups, consisting of *Chrysanthemums*, *Richardias*, *Euphorbias*, *Azaleas*, *Primulas*, *Lily of the Valley*, *Cyclamens*, &c., and in the houses and frames there are plenty of plants to continue the display. The *Richardias* in 10-inch pots are extremely fine, both in growth of leaves and pathos. I found these were reported as soon as the leaves had died down. *Cyclamens*, Veitch's strain, were carrying as many as thirty-six flowers, and

plenty more still to open. The *Euphorbia* (*Poinsettia*) had bracts which measured 18 inches across.

In the greenhouse there is a fine show of flowers, and a plant which deserves to be much more grown—*Stigmaphyllon ciliatum*—which should be seen in the best collection of climbers. Its flowers resemble those of *Oncidium flexuosum*, and the plant is very free-flowering.

The Orchid-house and stove combined contain a nice healthy collection of plants; in flower were *Calathea Veitchii*, *C. vestita*, and *C. oculata*; *Phaius grandiflorus*, *Dendrobium Phalaenopsis Schroderianum*, and *D. nobile Wardianum*. The old conservatory is a home for *Camellias*, &c.

The five vineries contain Vines in perfect health, although a vast number of plants are grown in them to keep up the heavy demand for plants and flowers in the dwelling. Mention may specially be made of *Smilax*, growing near the back wall, and trained up pieces of string; and of large healthy batches of *Freesia* and *Lachenalia triolor*.

The Peach-houses are in fine form, the trees grown on the extension system, and some of the trees bought two years ago, look fully ten years old, and have borne heavy crops of fruit. Under the back-roof of the three-quarter span Melon and Cucumber-houses are well-grown plants of *Stephanotis floribunda* and *Allamandas*; and the stage beneath carries well-grown plants of *Adiantum Farleyense*, *Eucharis grandiflora*, and *Spirea japonica*, with blossoms just opening. The front portion is devoted to batches of early-flowering plants, bulbs, &c., and to plant-propagation purposes till the Cucumber and Melon plants are ready to plant out.

The kitchen-garden walls are well furnished with fine trees, and the quarters well cropped with vegetables, and here, as elsewhere, careful cultivation is exhibited. I learnt that after the first Peas are picked and over, the haulm only is cleared away, and Runner Beans are dibbled in, the plants effording fine late gatherings, thus saving the time of staking and digging at that very busy time of the year. I noticed in full flower a fine plant of *Chimonanthus fragrans* on a south wall, a beautiful shrub that should be more commonly grown than it is. The general keeping of the garden reflects great credit on Mr. Randall, the head gardener. W. E.

NEW INVENTION.

We have had submitted to us for examination the "Clouzone" Orchid-pot, brought out by the Messrs. Rosher, of Ipswich, designed to help the gardeners in the successful culture of Orchids and other epiphytial plants. "Air plants" demand plenty of humid air, from which their aerial roots derive necessary nourishment, while the base of pseudobulbs from which springs the young growth or leads, must be well above the inimical influence of soured or saturated soil. Perfect drainage is the *sine qua non* of success. No crocks are necessary in potting, thus saving time to the gardener. A layer of moss, a few nodules of charcoal, peat, and sphagnum placed in the lower part of the pot, and secured by wire or raffia to the raised centre, on the top of which the Orchid is fastened. Under the hollow, perforated cone the air passes freely, and conduces to the health of the plant, causing the emission of strong and healthy roots, which burrow among the soil, from which all superfluous moisture (after watering by immersion or otherwise) rapidly drains away. The smaller sizes are made to suspend from the roof of the Orchid-houses, are light, and pretty in form, and ornamental when planted; they are, too, most handy to water by plunging. The larger sizes for standing on the stages are mounted on small feet of clay, to admit of the free passage of air and rapid drainage. For the preparatory potting of newly-imported Orchids, as well as for maturing the growth of established plants, these "Clouzone" pots will be found useful. Fresh peat and sphagnum can be added without undue disturbance or breakage of tender roots. The pot is well designed to meet the conditions above described.

CULTURAL MEMORANDA.

LUCULIA GRATISSIMA.

This is a very handsome plant, amenable to pot culture, but thriving best in a bed or border in a conservatory, where plenty of room can be afforded it. The rooting medium should consist of fibrous loam, peat in equal parts, silver-sand, and plenty of sandstone broken into small pieces, also a small portion of lime-rubble. On the occasion of a recent visit paid to Firbeck Hall, South Yorkshire, the residence of the Rev. H. G. Jebb, I observed in the large conservatory a specimen which perhaps has no equal in the country. This was planted about the year 1880, and at the time of my visit it was carrying between 500 and 600 heads of fully-expanded flowers. The flower heads contain numerous flowers, one of two fine heads given me by the gardener being found to consist of no less than 106 fully-open flowers (fig. 22.) It is surprising that this beautiful Himalayan plant is not more common in gardens, seeing the ease with which it can be cultivated, and the comparatively flowerless portion of the year during which its flowers appear. *W. M., Lancashire.* [Like the beautiful so-called green-house *Rhododendrons* raised in such numbers by Messrs. J. Veitch & Sons, the plant requires a temperature during winter, spring, and autumn, intermediate between that of the greenhouse and the stove. In summer, artificial heat is scarcely required. Our illustration is taken from a plant in the collection of J. Hope, Esq., Belmont, Midlothian. Ed.]

SCOTLAND.

GLASGOW PUBLIC PARKS.

THERE are fourteen public parks in and around Glasgow, covering in the aggregate about 1000 acres, which have been acquired, not counting the cost of "Glasgow Green," at a sum verging upon £450,000. Of these no fewer than eleven have been purchased since 1890, and laid out and dealt with according to the respective needs of the locality. Like every manufacturing centre of import, trees and shrub life suffer greatly from smoke and other impurities, and hence much of the space is under grass, with plantations for margins; and where the people mostly congregate, bedding out is introduced on a large scale—bulbs for spring, and miscellaneous plants for summer, involving, of course, considerable labour. The opening of the Botanic Gardens to the public is a great boon, and one that is greatly appreciated; and the principal parks, such as Kelvin Grove and the Queen's Park, are splendid examples of decorative and ornamental gardening. The lands of Campbell, which are adjacent, and form a connecting link with Queen's Park, add considerably from a woodland point of view to the people's estate, there being some fine specimens of timber trees about it which are carefully conserved, and the walks and drives are broadened to suit city life.

An important and rather unusual feature that has been introduced since Mr. James Whitton's appointment—which, by the way, is a popular one in every respect—is the erection of a range of glasshouses for supplying not only the needs of ornamental summer gardening, but for meeting the demands made upon the superintendent for plants for the decoration of the City Hall on all important occasions, and for the many rising institutions which are kept up by the charity of opulent citizens. There is a block of ten houses, five on either side of a spacious corridor, with an ornamental dome. The corridor itself is 174 feet long, 24 feet wide, and 13 feet high. The houses, which stand at right angles, are each 80 feet long, and vary in width according to the material grown within. These houses are thrown open to the public, barring two set apart for propagating purposes. During my visit the *Chrysanthemums*, which are galore nowadays, and are about the cheapest and showiest furnishing-material that can be grown, were very gay, one almost felt a relief turning from the masses of unkempt Japanese—"toozie," as the Scotch say, beyond measure to the quite beautiful flowers of such

a variety, for instance, as *Mary Anderson*. There is a nice set got together of the more useful decorative Palms—*Kentias* and of the *Dracenas* and *Crotons*, the stock of which is large, and always a pleasure to look upon. *Camellias*, too, were noticed in large numbers, and this is a place to recall people's attention to a class of plants now-a-days undeservedly neglected. The graceful pained *Humea elegans* is grown by the hundred, as is the useful *Fraxea ramosa*. *Lapagarias* and *Stephanotis*, and some of the showier stove-plants, *Sikkim* and hybrid *Sikkim* *Rhododendrons* are grown in quantity, chiefly for affording cut flowers; and then the stock of bedding plants is large and varied. Two or three of the houses are all but filled with Orchids of temperate and tropical climates. I was glad to observe a fine and varied lot of *Mastodermis*, in beautiful health too, one of the very best of the *Haryana* type, probably *M. H. splendens*. There is nice young stock of *Odonotoglossum crispum* and its congeners. *Cypridipedium* were bright and beautiful, especially the forms of *C. insigne*. *Cattleya labiata*, now one of the cheapest and most celebrated of the family, was in good flower. A great number of others in variety were coming along. *Nepenthes*, too, and quantities of *Ferns*, and the useful prostrate *Asparagus* were noted in two or three varieties. The stock of *Eucharis grandiflora* and *Panacratium* is getting considerable, and the plants show vigour.

There is a very large Winter Garden in course of construction on Glasgow Green, where the giants of vegetation will be easily accommodated. Altogether, public gardening in the "Second City" is broadening in its influence, and although the people's pence are expended a little more freely than heretofore, it is not in my belief without suitable returns in the matter of healthful recreation and enjoyment. J. A.

HOME CORRESPONDENCE.

PEARS OF GOOD AND BAD QUALITY.—In reply to Mr. J. Easter's inquiry of the variety *Conseller de la Cour* in a recent issue of the *Gardeners' Chronicle*, I find that this variety does well with me as a pyramid, bearing fine melting fruit, but of a colour that is not very attractive, being of a greenish-yellow when ripe, which would doubtless go against it as a market fruit. The soil here is a sandy loam, with a mixture of clay, and being rather light, it suits Huxley's Victoria Pear. G. T., West Park, Salisbury.

—As no one has replied to Mr. Easter's inquiry (*Gardeners' Chronicle*, p. 48) respecting the quality of *Conseller de la Cour* Pear in the south, I would remark that with me it is one of the best October and November Pears; flavour good, size large, and the tree generally bearing good and regular crops; it is also a very good grower. I have the variety as large pyramids on the Quince stock. If allowed to over-crop, of course the quality of the fruit would be impaired. It succeeds Louise Bonne of Jersey. Louise Bonne, *Conseller de la Cour*, Duycnne du Conies, Hacon's Incomparable, and *Joséphine de Malines* on large pyramids are my most useful Pears. James John Foster, Stanmore, Middlesex.

THE FUTURE OF THE CYCLAMEN.—A few years ago a Cyclamen was exhibited at one of the meetings of the Royal Horticultural Society, with an inconspicuous white crest running up the centre of each petal. One of these blooms was illustrated in the *Gardeners' Chronicle* at the time, and the block was reproduced a few weeks ago in illustration of an exhibit by Messrs. Hugh Low & Co., at the December meeting held at the Drill Hall. The old block, however, did no sort of justice to the advance made by Messrs. Low & Co., and at my request the firm kindly supplied me with several typical blooms. One of the best of these is shown fig. 13A, where it will be seen that not only has the crest-growing now become in some blooms highly developed into a series of white crests one above the other, but the petals show bold outgrowths towards the base of the flowers, and exhibit slight indications of notching or fringing. On a very careful examination of the compound fringe, a slight twist can be detected in each outgrowth after the manner of the petals. On looking to the calyx, faint indications of notching can be detected in some examples. In the Primulaceae, the natural order to which the Cyclamen

belongs, the stamens are not alternate with the petals, as is usually the case in other natural orders of plants, but opposite to the centres of the petals. The future of the florists' Cyclamen must be, therefore, as sketched at c, a large number of petal out-growths lapping over each other and not alternate. *W. G. Smith.*

A HYBRID CINERARIA.—I can fully bear out Mr. Harrow's statement respecting the *Cineraria* mentioned by him in last week's *Gardeners' Chronicle*, p. 63. When on a visit to the Sheffield Botanical Gardens the first week in November last I had the pleasure of seeing the plant referred to, which was then in full bloom, and I was much struck with its beauty, and what I may term, its utility, as it is of a more decorative value than the ordinary garden *Cineraria*. The habit of the plant is elegant, and more branched, the leaves not so large, and the peduncles longer, and these being rather wiry make the flowers very suitable for cutting. The flowers are self-coloured, bright, and pleasing. It is an unfortunate feature

ramming a little. The potting is done with moderate firmness, the compost being neither too moist nor too dry. No water should be applied before the pots ring well when struck with the knuckles, but syringing them over-head as may seem necessary in dry weather. Cyclamens grow freely during the summer in cool frames on a north aspect till September, when they should be removed to a south aspect, where they can remain until the middle or end of October by covering the plants at night to ward off frost. After this date they should be removed to a temperate-house, and placed close to the glass; and if stood on inverted pots over moist ashes, all the better. By October the pots will be filled with roots, and weak liquid-manure afforded twice a week will assist them very much. I have now in my charge over 150 Cyclamens which came from Sutton & Sons, and which are opening plenty of fine flowers. Cyclamen roots are very strong, and I consider that pretty firm potting is desirable. If my method of managing old corns is acceptable to your readers, I

new strain—one was for the petals to become decidedly short, broad, and rounded, rather than oblong-spatulate, as in the case of the type; and in a few cases they were some way towards flattening-out, though retaining saucer-shaped. The strain was designated *Papilio*, which is scarcely a correct and appropriate one. The most attractive variety was one in which the petals were bright deep rose, with short, broad, rounded petals slightly fringed, opening out in the form of a single rose, and reflexing; another was white, saucer-shaped, and the large petals much fringed, but here the tendency was to incurv rather than reflex. Another white was of the same size and form, but the centre was bright crimson, as in the case of the mouth of the corolla of the improved form of *C. persicum*; but this was not so much fringed on the petal edges as in the case of the previous one. Another had pale rose blossoms, with a rosy-crimson centre, the petals fringed and incurving. Another blush-tinted variety had the fringed petals



FIG. 22.—*LUCCULIA GRATISSIMA.* (SEE P. 80.)

that this species fails to produce seed, it being such a valuable addition to winter-flowering plants. It appeared to be a very free and continuous flowerer. To work up a stock from cuttings sufficiently large to put on the market must take a long time, notwithstanding its free-rooting properties. *J. H. W.*

CYCLAMENS NOT OPENING THEIR FLOWERS.—I read with attention the articles which have appeared on this subject, but without discovering anything novel in the method of cultivation pursued by the writers. Your correspondent, "C. B. W.," did not state whether his Cyclamens were seedlings or old corns; but with both, good drainage is an essential point. I have grown great numbers of Cyclamens, although I am but a working gardener, and I never had plants which did not open their flowers properly. The kind of compost I generally made use of consisted of decayed lily loam two parts, no matter what colour, but preferably that from stiff land, decayed leaf-mould one part, coarse silver-sand one part. I make the drainage perfect, at the same time letting it take up as little space as possible; over the corks a small quantity of moss is placed, and above this a few rough pieces of the loam,

will write again when the flowering-time has passed. *J. L., The Woodlands, Staffs.*

THE WEATHER IN CUMBERLAND.—The weather in these parts has been very severe lately, and boisterous snow-storms have been experienced almost daily. The neighbouring hills are clad with snow, and we have a covering 6 inches or more deep all round. Our thermometer on the night of the 17th registered 24° of frost, and nightly we have had 8°, 10°, and 12° registering on the 23rd, Saturday night, 29° of frost. *Arthur Smith, Eden Hall, Longworthly.*

A NEW STRAIN OF CYCLAMEN PERSICUM.—That there will be differences of opinion as to the value of the strain of *Cyclamen persicum* Mr. de Langhe, Rue de Constantinople, Brussels, exhibited at the meeting of the Royal Horticultural Society on 12th inst., there can be no doubt; but that they represent something quite distinct and out of the common (see fig. 19, p. 71). The possibilities of development in them should lead them to be regarded with favour rather than with disfavour. There could be observed two tendencies in the

headed with rose; in this case the petals were reflexing, and appeared as if they would eventually assume the normal shape. Another, and one of the most promising, had but one flower expanded, the ground was bluish, but the central stain of bright crimson was much diffused; the much-fringed petals were bluish-white on the edges. Some salmon-tinted varieties were diversely and irregularly shaped, but all more or less coloured about the mouth of the corolla. The Floral Committee did wisely in giving an Award of Merit to the strain, because of its distinctness. *R. D.*

GRAPES AT EXHIBITIONS.—In regard to this controversial matter, Mr. Kirk, I think, must be aware of the fact that I acted as a censor at the exhibition indicated, and had three hours' work among hardy fruits. The committee of management knew well the sad circumstances which necessitated my hurried exit from that fine show, and I should have been excused performing my duty had I desired it. I was therefore prevented from making a careful inspection of the Grapes. As to criticising the awards of the Royal Horticultural Society at the Crystal Palace, this is a statement which is untenable, as neither in

thought, word, or deed, have I disparaged the awards of the judges on this occasion. I, however, fear that we are not likely to get rid of the friction—so common at exhibitions—if horticultural societies do not submit something definite for the guidance of judges and exhibitors alike. *M. Temple, Carron, N.B.*

THE NEW "BLUE" PRIMROSES.—The variety G. Wilson is a beautiful hardy plant for the spring garden, and I send a few flowers for your inspection of different shades of colour from seedlings. I obtained a packet of seeds in February, 1896, and sowed the seed, as soon as received, in a mixture of loam and leaf-mould and sand, in a pan which I placed in gentle heat. The plants (thirteen) came up, and in the month of May I potted them off into 60's, and placed them in a cold pit; in July they were shifted into 32-pots, and these plants are large in size and in full bloom, all but one being of blue or purple shades of colour. They form a pretty addition to early spring flowers, and as the plant is readily increased by division after flowering, it makes a useful plant for the spring garden. Seeds may be sown as soon as ripe. [Pretty shades of colour, but certainly purple—*not blue*. Ed.] *Wm. Smythe, The Gardens, Basing Park, January 11.*

FORCING RHUBARB.—Mr. Wythes, in his notes on this subject, appears to forget that Rhubarb is, or rather should be, grown to eat. My own experience with forced market Rhubarb is that it is bitter and unpleasant. Varieties are grown which are really unfit for table use, and in my own experience many families have discontinued its use owing to the uncertainty as to what they will get. For a first early the only variety we have found worth growing is Linneus, which Mr. Wythes does not even mention; and after a long and mostly unpleasant experience; we now grow only Linneus and Victoria, but we do not grow for market, and therefore flavour and quality are of no importance. *Thos. Fletcher, Groppehall, Cheshire.* Our own experience is, that the smaller the Rhubarb stalks, and the poorer the land on which it is grown, the better is the flavour. [Ed.]

THE LATE MR. JAMES WEBBER.—Your correspondent, "A. D.," p. 49, wrote in graceful terms of the late Mr. J. Webber, every word of which I fully endorse, having known him some thirty years ago, and being well known to him otherwise than simply a successful market salesman. Doubtless he did much good to the gardeners whom he came into contact with, both by his lessons on the packing of soft fruits, and by the offering of substantial prizes for the best methods of packing. He originated, and carried on single-handed for several years, those valuable object-lessons which greatly improved the methods of packing in general use, and which, had not troublesome times overtaken the Royal Horticultural Society, would, very probably, have been taken up by the exhibitors at the present show. I have no doubt, however, that the apples and hardy fruits, that it is quite safe to assume that from one-third to one-half of the profits are lost to the producer, as well as being a loss to the nation, hence the necessity for a new inauguration of competitions in fruit-packing. The deceased salesman first offered prizes for fruit-packing in 1880: for the best three packed boxes or baskets, viz., not less than 11 lb. of Grapes, 2 dozen of Peaches, and not less than 2 lb. of Strawberries, delivered by a railway company in the ordinary manner, an official receipt to be produced by the exhibitor if they had been so delivered. Three judges were appointed—one a wholesale market man, a retailer, and a gentleman's gardener, South Kensington being the point of rendezvous. Being then in charge of a dual garleuing establishment whence nearly all the produce was sold, I entered the competition, and was rewarded with the much-coveted honour, which everybody regarded as the blue ribbon of the season. The fruit afterwards was sent on to Mr. George Moure in the usual way, and realised a high price. Mr. Webber kindly criticised the weak points of the methods I pursued, and gave me some valuable hints, which I utilised, and won in the next year's contest. Circumstances afterwards prevented my competing again, and Mr. Coleman and others took up the running. After my first success, I offered to stand out, but Mr. Webber would not hear of it, and particularly wished my method to be shown as an example of good packing for market. Clean, sweet moss was the chief packing-material used; and even now it is hard to beat it, for when well prepared its elasticity is perfect. Mr. Webber condemned cotton-wool, bran, &c., and always maintained that the cost of the packing-material was of

the greatest importance, it being seldom returned to the sender; and there was no wood-wool in those days, and now-a-days there does not seem to be time to prepare the moss. I have used moss for fruit-packing for the past thirty years without having a complaint; of course, it was well prepared, beaten and tased, and put away in bags when in a quite dry state. Mr. Webber's philanthropy in regard to the gardening charities, it is to be hoped, will be imitated by other Covent-Garden salesmen. *W. Crump, Madresfield.*

WOOD-ASHES AS A MANURE.—Mr. T. H. Smith, in his letter on the above subject, overlooks the most important point I raised, i.e., that the dust-ash of coal should be identical in composition and properties with the ash from wood; and if this is the case, hundreds of thousands of tons of this, which could be collected at a very small expense, are annually thrown away. Since my first letter, I have obtained analyses of many samples of coal-ash, but they vary so enormously, that it appears to be difficult to get at an average value, some samples being almost worthless, whilst others are very valuable, judging by their chemical composition. There are many manufacturers in this country where from five to fifty tons of fine coal-ash are made every week; and this could be had for little more than the cost of screening, which would not exceed 1s. or 1s. 6d. per ton. The experiment should be worth trying on a fairly large scale. *Thos. Fletcher, Groppehall, Cheshire.*

FERDINAND VON MUELLER.—The news of the death of Sir Ferdinand Von Mueller came to me just as I was preparing to send him freshly-ripened seed of *Elymus araneus*, which, after reading his success with *Amnophila*, I was about to ask him to try; having ascertained that the herbivore of the *Elymus* is freely eaten, and, to all appearance, liked by the horse, it would have many advantages over the *Amnophila* in the production of food, as well as in its binding roots, and although the appearance and harshness of the foliage may seem unlikely, yet it is noted by Parnell that the *Elymus* contains more sugar than any other British grass, which may be a reason for the horse looking for more when it is offered to him. The last letter I received from Sir F. Von Mueller contains a hint of the probable occurrence on our coast of an overlooked plant, and its contents are just in the style he usually employed: "On account of the enthusiasm which carried him through the work he accomplished, and built up his own monument. *William Mitten.*"—"It was most kind of you, dear Mr. Mitten, to send me the large number of Mosses and their allies, by which the collection here in the two herbarium halls (containing nearly a million sheets) becomes so much enriched, and where, so far as human foresight goes, your authentic specimens will be utilised through centuries to come. The Rev. Mr. Powell's collection has a special interest; he showed it me when he was in England very many years ago, and the specimens then to be taken to you. As I have explored through the whole Austral Alps, I am much interested in what you say about your last alpine tour. As you doubtless are conversant also among British and other Phanerogams, may I direct your attention to the probability of *Kochia hirsuta* occurring also on British shores intermingled with *Suaeda maritima*. As the northern forms which I know from Schleswig, [they] are often almost glabrous, [and] are easily passed as *S. maritima*, but generally some hairlets [spots] can be observed in the axils of the leaves, and the upper part of the stem is rarely turned spirally. Of course the embryo of the two plants is very distinct. Are you sure, that of the numerous Mosses which you examined so kindly for us here, a sufficiency is left for your own herbarium? I will keep this, sending for awhile together, so that any specimens particularly mentioned can still be shared by you. Have you kept a record of the localities? If so, such would be well worth publishing in one of the home periodicals, as our knowledge of the geographic distribution of Australian Evasculares is still very imperfect. Let me hope you are happy and well, and will long yet enjoy the triumph of being identified with the moss-dora of the whole world.—Ever regardfully and gratefully yours, FERD. VON MUELLER."

GRAPES AT PENRHYN CASTLE, BANGOR.—It seems to be the prevailing idea with gardeners that the best Grapes are to be found only at horticultural exhibitions. Fortunately, this is not entirely the case; and at all events, any calling, as I did recently at Penrhyn Castle, will find the reputation for good

Grapes, for which Penrhyn gardens are famed, well sustained at this season. Here were to be observed bunches of Muscat of Alexandria weighing from 3 to 4 lb. each, with large bright amber-coloured berries, the bunches perfect in symmetry and finish. Lady Downes' Seedling was equally good of its kind, berries enormous in size, showing the thinning had been properly performed. An agreeable surprise was to find the new Grape, Lady Hutt, in such fine condition, the vine carrying fruit being inarched on to Lady Downes' Seedling. The bunches of this variety weighed from 2 to 3 lb. each, with large globular berries, white-green in colour, perfect in finish, plump and fresh, and looking as if they would keep till March or April. This is undoubtedly the finest flavoured late-keeping white Grape in existence, and their condition was a proof that whatever Mr. Speed takes in hand is done well. The whole of the vines at Penrhyn were planted thirty or more years ago, and it is a marvel that such high quality in the Grapes is so long maintained. The system followed is not half-hearted extension, followed by severe disbudding, nor is utility sacrificed to appearance. The crowding of the foliage as well as overcropping are most carefully avoided, and the borders come in for a large share of attention; and in the work of renewing them more sharp grit is used than was formerly the case, the better to promote the porosity of the soil when the fibre of the turfy soil used decays. Still, no loose, light, or spongy borders are tolerated. *W. Crump, Madresfield.*

CEDRUS DEODARA.—I have been much interested in reading the notes on the above variety of Cedar, but owing to rheumatism in my right arm, I have been unable to use my pen. Had I been able, I would have written, ere this, and I consider far too little is written in the *Gard. Chron.* about fine varieties and species of trees. In regard to this Cedar, I must say that the variety as introduced in the year 1831, and grown and sold by the thousand, is, I consider, a very uncanny tree, particularly as a timber-tree. I have seen it growing nearly all over England, and in several parts of Scotland; and, as compared with the Cedar of Lebanon and many other fine Conifers, it is of very little use. The late Mr. Anthony Waterer, who was one of the best judges of a good tree, knowing the tree, and the value of the Albany "like weeds," asked me what I thought of the Deodar? My answer was, "No good," to which he responded, "You are quite right." But what I wish to say now is, that I believe the true Indian Cedar was introduced not in 1831, but two centuries earlier. This tree is quite distinct from the *C. deodara* of to-day, differing also from the Lebanon Cedar. Several Cedars are growing here, and they are all called Lebanon Cedars, although they are quite distinct from the ordinary Cedar of Lebanon, which cannot be mistaken, its distinct tabular form of branches making it conspicuously different from any other kind of Coniferous tree. The tree which I consider to be the true Indian Cedar has an upright habit of growth. Three examples here are more than 100 feet in height, with trunks which have a circumference of 15 feet; whereas the Lebanon Cedar runs 70 to 80 feet in height, and 11, 12, and 13 feet in circumference. Some of the readers of the *Gardeners' Chronicle* will ask who introduced them to this country? My answer is, who can name the introducer of the first Cedrus Libani to this country? Certain it is, that long before the Royal Horticultural Society existed, or such men as Douglas, Lobb, and others, saw the light of day, many of our finest kinds of trees were introduced from abroad, although little is known of the actual introducers. Mr. Wiles, Unsted Park, Godalming, writing in the *Gardeners' Chronicle* of December 19, 1896, says, the Deodar can be seen at Peper Harrow Park "of great age and size." This will I think help to bear me out, that there are to be seen the true "Indian Deodar, a tree quite distinct from the one known and grown in our nurseries during the last forty years. In conclusion, I beg to say that I have never seen the Cedars at Peper Harrow Park." *J. F. C. Leach, Albany Park Gardens.*

PARENTAGE OF SOME VARIETIES OF THE ROSE.—I read with great interest Dr. Williamson's notes on Roses, but in those upon the "Parentage of Roses," appearing on p. 56 of the present volume, there is an error which should not go uncorrected. He is evidently confused with Thérèse Levet and Etienne Levet. Thérèse Levet (H.F.), is *syn.* with Madame Louis Léveque (H.F.), a seedling from Jules Margottin in 1874; but it was not the parent of Duke ofife. Were it not that your corres-

pendent writes that Duke of Fife was obtained from Thérèse Levat, and the last-named from Jules Margottin, I should have thought it a printer's error in substituting Thérèse for Étienne; Étienne Levat, a totally distinct Ross, being the parent of Messrs. Cockers' Duke of Fife. The growth, as well as the raiser's claim, confirms this in every way. There is a Tea Rose under the name of Souvenir de Thérèse Levat, introduced by Lévesque in 1839, and also a Tea variety named Madame Louis Lévesque, introduced by the same raiser ten years later. When naming those raised by the late Henry Bennett, Dr. Williamson says, "all of these have almost ideal characteristics; they are vigorous (Italics are mine), in habit, &c.," if Cleopatra, Princess of Wales, and Princess Beatrice are vigorous with him, it is an exception to their general habit. I doubt if even the Rev. F. Burnside, the grower of the beautiful Cleopatra exhibited at Windsor in the Queen's Cup class some few years back, would venture to call it a King but a moderate grower. Indeed, I understood him to say it was difficult to find the plant afterwards. There was no doubt about the bloom, as all who saw it will confirm. Le Reine is an old favourite of mine; it was sent out by Lafay in 1843-4, and under the name of Reine du Midi by Roland in 1879, and is also known as Reine des Français. A. Piper.

CUPRESSUS MACROCARPA.—In answer to the enquiry of "F. M." in last week's *Gardeners' Chronicle* about the Cupressus macrocarpa that were planted here forty years ago, he will be glad to know they are still to be seen, and are now about 40 feet high, but they have never recovered from the serious damage done to them by a continuation of cold, violent winds about three years ago. They were beautiful specimens twenty years ago. It is one of the most beautiful of ornamental evergreens, and of remarkably rapid growth. It is quite hardy here so far as frost is concerned, but must not be exposed to high winds. I planted a quantity of them in the "Long Walk" here (which "F. M." knows well some years ago, and they are now beautiful compact specimens, thickly clothed with foliage of a bright green colour. Perhaps "F. M." will remember another tree planted by Mr. Moore at or about the same time as the Cupressus, namely, the Chinese Juniper, which also stands on the lawn in front of the plant-houses; it is now 20 feet high, closely branched from the ground to the top, and with its bright catkins in summer is an object of much beauty. I only mention this to show how well they do planted on the whinstone rock, with only 6 inches to 15 inches of soil to grow in; and in very dry summers the leaves are always burnt up, which, I am once more sure, they will not stand any undue accumulation of water at the roots. David Inglis, *Horwick Hall Gardens, Lebury.*

LADY HUTT AND APPLEY TOWERS GRAPES.—In your issue of January 16, Mr. Lambert refers to these varieties as having seen them here in 1895. I am pleased to say they were better in 1896 than when he saw them. The best samples of Lady Hutt were grown on a rod grafted on a Vine of Golden Queen, and these Grapes were of a bright yellow colour, and of very good flavour. Grafted on White Tokay they were not quite so good either in colour or flavour. On its own roots, and also grafted on the Black Hamburg in a later house, the fruit was ripe about October, and was of the usual greenish colour, of which complaint is so often made; neither were they so good in flavour, although, had they been earlier ripe, they might have been better in both respects. I am rather partial to this variety; at the same time, I think that it is not so good in flavour here as Mrs. Pearson, and I question very much if it will keep much longer than that Grape. Appley Towers I like the better of the two. I have it on its own roots, grafted on Alicante, Gros Colman, and Lady Downes, and from the latter I have had the finest bunches. I like it better as a keeper than Alicante, but it requires severe and careful thinning, for if at all crowded in the bunch, it is very apt to damp in the centre of the bunches. In point of flavour it is here a little superior to Black Alicante. I bottled a few nice bunches of it last week that I think will keep well till the month of March is out. The foliage during a beautiful bright red colour. But for shaking hands with the new Grapes coming in in the months of May and June, which we have done here for many years, we must still depend on Lady Downes' Seedling, an old and well-tried friend to many a gardener who has to keep up a supply all the year round; for it is still the best keeping variety that we possess. J. Wallis, *Keele Hall Gardens.*

— It is now some three years ago that I grafted a specimen of Appley Towers on a Vine of Black Hamburg, growing in our late vinery. I have gathered fruit from the graft for the past two seasons; last year it carried six bunches, two of the largest weighing between 3 and 4 lb. each. Two smaller bunches I exhibited in the "Any Variety Class" at the Shrewsbury Show, taking 3rd prize, being beaten by fine examples of Madresfield Court. Then again, the 3rd prize bunches, best fine bunches of Gros Maroc in the same class. I consider Appley Towers possesses many good qualities, and as it gets better known it will be more extensively cultivated. It resembles Lady Downes' Seedling, forming one shoulder to the bunch, but is more massive, has larger berries, and the skin is not quite so tough. The berries are of the same shape as Lady Downes, and their flavour is superior to the Black Alicante. It seems to be an excellent keeper, some of the bunches having hung on the Vines for more than three months without shrivelling or deteriorating in flavour; moreover, the bunch does not scald as does Lady Downes. The variety Lady Hutt I have not grown, and cannot therefore speak of its qualities. Chas. Roberts, *Hulston, Shropshire.*

GROS MAROC GRAPE, ETC.—I am, as a Scottish gardener, very much interested in the discussion going on in the columns of the *Gardeners' Chronicle* in regard to the merits or demerits of Gros Maroc Grapes, and I am surprised that this discussion has been so long deferred, especially in face of the decision of the judges at the last September show held in Edinburgh, in placing Gros Maroc before Muscat Hamburg and Madresfield Court in the class "for any other black Grapes," more especially as the latter varieties were shown in splendid condition. I remember distinctly remarking to my friend, Mr. Boyd, who exhibited Muscat Hamburg how fine they were, and I thought his bunches of Madresfield Court in the same class were perhaps the best of their kind in the show. That was not the only surprise; there were others in stores—real "eye-openers," in the class for "six bunches in at least three varieties," and in the class for "four bunches, distinct." In the six-bunch class the judges awarded the 2nd prize to a stand containing four bunches of Alnwick Seedling, one bunch B. Alicante, and one Gros Maroc, against other stands having Black Hamburg, Madresfield Court, Muscat Hamburg, and Muscat of Alexandria. The same thing occurred in the four-bunch class; in fact, it would seem that quality was not recognised, as the coarsest and ugliest-shaped bunches of the coarsest varieties were those which had the preference. What do northern gardeners think of that? I noticed at the same show that the judges preferred the flavour of Black Hamburg Grapes to that of Muscat Hamburg. Mr. Temple (p. 728 of the last volume) goes on to lament the absence of these fine Grapes, Black Hamburg, &c., from our exhibition tables of fruit at northern shows, and to say what grand Grapes were exhibited twenty and thirty years ago by the late Mr. Johnston, Meredith, &c. We are all of us perfectly well aware that these men showed grand Grapes in their day, but that fact is not disputed. Who is to blame for driving out the grand Grapes from our exhibitions if judges persist in ignoring good Black Hamburg and Muscats in preference to such unattractive stuff as Alnwick Seedling, Gros Maroc, and Gros Colman, varieties which have nothing to commend them but their appearance. So long as these varieties are preferred and publicly recognised as superior to Black Hamburg and Muscats, I am afraid the latter will continue to be conspicuous by their absence. David Andrie, *The Gardens, Lubert House, Stirlingshire.*

Obituary.

ALEXANDER CURLE.—It is with much regret we have to announce the death of Mr. Alexander Curle, which took place very suddenly on January 5, at his residence at Priorwood, just overlooking the ruins of Melrose Abbey. Over 300 mourners formed the funeral procession. Mr. Curle took a keen interest in all matters pertaining to art, archaeology, agriculture and botany, and he had an observant eye for all things beautiful in Nature—but it is more in our province to refer to him as a horticulturist. All his life long he loved his garden.

About eighteen years ago he commenced the culture of Orchids with a good general collection. Cattleyas were his favourites, and he was fortunate in securing

some very fine varieties, his motto being that a good plant required no more space and attention than an indifferent one. *Cypripedium* and *Masdevallia* were his next specialties, and of these he has left a very fine collection. He was successful in crossing *M. macrura* with *M. tovarensis*, which has produced a lovely hybrid, named in his honour *Masdevallia Curlei*.

Unlike many specialists, he had a capital knowledge of all classes of horticulture, and his whole garden and grounds were an interesting study. He also paid special attention to the culture of fruit-trees, and was well versed in their adaptability for various sorts of soil and temperatures.

TRADE NOTICE.

We understand that Mr. W. BURTON, well known in the gardening world, has re-entered the nursery business, and is now engaged with Mr. John Russell, of Hampstead, Brentwood, Richmond, &c.

MARKETS.

COVENT GARDEN, JANUARY 28.

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

s. d. s. d.		s. d. s. d.	
Anemone, doz. bun.	3 0-6	Orchids:—	
Arimus, p. 12 blooms	3 0-6	Cattleya, 12 blms.	6 0-12 0
Bon vardian, per bn.	0 6-9	Odoxoglossum	
Darwinias, pr. doz.		crispum, 12 bn.	2 0-6 0
blooms ...	1 0-3 0	Pearl-gonias, scar.	
Chrysanthemum,		let, per 12 bun.	6 0-9 0
doz. bun.	2 0-6 0	— per 12 spray...	0 6-9 0
— doz. blooms	1 0-3 0	Poinsettias, 12 bl.	4 0-9 0
Encharis, per dozen	3 0-6 0	Frystridium, 12 bu.	2 0-4 0
Hyscodistis (Roman),		Roses (French, per	
doz. spray	0 6-10	doz. blooms ...	1 0-2 0
Lilac, wh. (French),		— Tea, per doz. ...	1 0-1 6
per bunch ...	3 6-5 0	— yellow (Mar-	
Lilac, var. (French),		tin), per doz.	6 0-9 0
doz. blooms ...	5 0-8 0	— red, per dozen	1 0-2 0
Lily of the Valley,		— pink, per doz.	3 0-4 0
doz. spray ...	0 6-10	— Saffran, p. doz.	1 0-2 6
Maidenhair Fern,		Snowdrops, doz.	
per 12 bunches ...	4 0-8 0	bunches ...	1 0-2 0
Marguerites, per 12		Tuberose, 12 blms.	1 0-2 0
bunches ...	2 0-4 0	— 12 gar. bun.	0 6-1 3
Mignonette, per		Violas (Fr.) Parme,	
doz. bunches ...	4 0-6 0	per bunch	2 0-3 6
Mimosa (French),		— doz. bun.	1 6-2 0
per bunch	1 0-1 6	— (Eng.), per	
Narcissus, various,		doz. bun.	1 6-2 6
per doz. bunches	1 6-3 0		

ORCHID-BLOOM IN VARIETY.

s. d. s. d.		s. d. s. d.	
Adiantum, per doz.	4 0-12 0	Ferns, small, doz. ...	1 0-2 0
Aspidistra, per doz.	12 0-30 0	various, doz. ...	5 0-12 0
Asplenium, each	5 0-15 0	Ficus (F. sp.), doz.	1 0-7 6
Azalea, per doz. ...	24 0-42 0	Foliage plants, per	
Chrysanthemum, per		doz. ...	12 0-36 0
doz. ...	6 0-12 0	Genistas, per doz. ...	3 0-15 0
Cinerarias, per doz.	8 0-12 0	Hyscodistis, per doz.	6 0-12 0
Cyclamens, per doz.	8 0-18 0	Marguerites, p. doz.	8 0-12 0
Dracenas, each ...	1 0-6 0	Palms, various, ea.	2 0-10 0
Evergreen Shrubs, per		— specimens, ea.	10 6-24 0
in variety, doz. ...	6 0-24 0	Poinsettias, per doz.	9 0-12 0
Eriops, per doz. ...	10 0-12 0	Solanums, p. doz. ...	9 0-12 0
— hyemalis, doz.	10 0-15 0	Tulips, doz. pots ...	6 0-9 0

FRUIT.—AVERAGE WHOLESALE PRICES.

s. d. s. d.		s. d. s. d.	
Apples, Blenheim,		Grapes, Gros Col-	
per sieve ...	6 0-7 0	man, 2nd qual.	
— Wallingtons,		per lb. ...	1 3-1 6
per sieve ...	7 0-8 0	— Muscats, Eng- land, 1st quality	
Grapes, Alicante,		per lb. ...	4 0-5 0
1st quality,		— Muscats, 2nd	
per lb. ...	1 6-2 0	qual., p. lb. ...	2 6-3 6
— Alicante, 2nd		Nuts, Cob, per lb.	55 0-60 0
quality, per lb.	1 0-1 2	Pine-apples, St. Mi-	
Gros Colman,		chel, each ...	3 0-9 0
selected, p. lb.	2 0-2 6		

VEGETABLES.—AVERAGE WHOLESALE PRICES.

s. d. s. d.		s. d. s. d.	
Artichokes, Globe,		Cucumbers, home-	
per doz.	3 0-3 6	grown, select,	
— Chinese (Sta-		per doz. ...	10 0-12 0
chysytorhifera),		Mushrooms (Indoor	
per doz.	0 3	per lb. ...	0 6-0 8
Beans, French,		Potatos, New Kid-	
Channel Is.,		neys, (Cottol-	
per lb. ...	1 6-1 9	lins) per lb.	0 5-0 6
— Maletta Kid-		— Kidney Potat-	
neys, per bkt.		toes, French, lb.	0 2-0 2 1/2
of 8 to 10 lb. ...	3 6-4 0	Rhubarb (Forced),	
Carrots, per doz.	8 0-10 0	per doz. ...	1 3-1 6
— Male, per doz.	1 0-2 6	Sea Kale, per pun-	
Cauliflowers, Chur-		net, 3 1/2 to 4 lb.	
chew, per doz.	1 3-1 9	Tomatoes, Canary-	
— doz. ...	1 3-1 9	Islands, per case,	
Cauliflowers, Corn-		about 12 lb.	4 0-5 6
wall, per crate,	11 0		

POTCES.

A better demand has prevailed the last few days. Prices range from 40s. to 95s. per ton, according to variety and quality. Large stocks still on hand.

THE WEATHER.

[The term "accumulated temperature" indicates the aggregate amount, as well as the duration, of degrees of temperature above or below 42° Fahr. for the period named; and this combined result is expressed in Day-degrees—a "Day-degree" signifying 1° continued for twenty-four hours, or any other number of degrees for an inversely proportional number of hours.]

DIRECTIONS.	TEMPERATURE.				RAINFALL.	BRIGHT SUN.
	ACCUMULATED.				(Inches)	
Above (+) or below (-) the Mean for the week ending January 26.	Day-deg.	Day-deg.	Day-deg.	Day-deg.	10th lueh.	Inch.
	0	5	1	0	0	0
Above 42° for the week.	0	60	60	14	14	8
	72	20	24	2	2	11
Below 42° for the week.	0	55	18	1	1	13
	74	19	1	1	1	18
Above 42° difference from Mean since January 23, 1897.	0	76	24	19	4	13
	74	22	1	5	5	12
Below 42° difference from Mean since January 23, 1897.	0	61	24	20	12	12
	57	21	14	6	6	10
More (+) or less (-) than Mean for the Week.	0	68	23	13	8	19
	57	28	37	7	10	9
No. of Heavy Days since January 23, 1897.	0	50	23	25	8	19
	23	20	4	5	15	20
Total Fall since Jan. 23, 1897.	Percentage of possible Duration for this Week.					
	Percentage of possible Duration for this year, 1897.					

The districts indicated by number in the first column are the following:—
 0, Scotland N. Principal Wheat-producing Districts—1, Scotland, E.; 2, England, N.E.; 3, England, E.; 4, Midland Counties, 5, England, including London; 6, Principal Grazing, &c. Districts—6, Scotland, W.; 7, England, N.W.; 8, England, S.W.; 9, Ireland, N.; 10, Ireland, S.; *Channel Islands.

ENQUIRIES.

"He that questioneth much shall learn much."—Bacon.

CHRYSANTHEMUM SPORTS.—Mr. Henslow, Drayton House, Ealing, London, will be greatly obliged to cultivators of the Chrysanthemum if they will kindly inform him of any sports which they have had during the last two or three seasons, and to state the name of the parent plant as well as the colours of the flowers of both parent and sport; also to describe any special treatment the parents may have had. If they can suggest any other cause of the sport, he will be glad to know of it.

"R. D. R." asks: Is it usual for *Magolia grandiflora* to set seeds in this climate out-of-doors? I have, he says, a large tree against my house (south aspect) which has now a fine seed-pod the size of a pullet's egg, conical in form, and with reflex spines. There is only one such pod, and it is the first that has appeared, though the tree has been there for thirty-six years. Is the seed likely to germinate? I have also had seed-pods of the common white Jasmine last summer for the second time in thirty years, but on north aspect. For figure of this plant see *Gardeners Chronicle*, January 18, 1896, p. 50.

A correspondent, "E. P.," would be greatly obliged if some of our correspondents would tell him whether *Cineraria* plants have leaves which curl up. He has them in a greenhouse with a night temperature of 45° to 50°, and higher by day, with sun-heat and ventilation.

NOTICES TO CORRESPONDENTS.

ADDRESS: Will *White Rose* kindly furnish his full name and address, not necessarily for publication, but as a guarantee of his good faith.

A WHITE-FLOWERED *CLIVEIA MINUTA*: A. D. White-flowered forms of the species are not common.

BEE: N. W. We should suppose that, in selling you Brazilian Beet for ordinary red Beet, a mistake was made by the shopman, and that the firm of seed-dealers would make you some compensation. Of course, it would be necessary for you to prove that the produce was Brazilian Beet.

BOOKS: F. B. G. *The Orchid Album, The Lindenia, Brussels; Copiaque's Dictionnaire, Iconographique des Orchidées.* For culture, Williams' *Orchid Growers' Manual*.—R. W. H. Newton's *Landscape Gardener's Manual*, published by Hardwick & Budge, of Piccadilly. You might meet with this book and Kemp's *How to Lay Out a Garden*, at the second-hand book-shops, at very reasonable prices.

DIAGRAMS FOR CLASS-WORK: F. Regan. We think you would obtain these from or through Messrs. Williams & Norgate, booksellers, Henrietta Street, Covent Garden, W.C.

ESCAROLLE: J. O'B. This is a mis-spelling of the Italian word Escarolo, or Endivia Escarolo, the Broad-leaved or Batavian Endive.

FUNGUS-PROOF SEED BOXES: R. F. G. Of "soft" woods the best would probably be Menel or red deal, and of hardwoods Oak, Eucalyptus, Teak. As an aid to preservation the wood might be primed with red-lead paint, and then receive two coats of paint of any desired colour.

GALVANISED WIRES: J. H. R. What the kind of action is that galvanised iron wire exerts on vegetation when in contact with it is not quite understood, but that it is injurious has been many times demonstrated. If the wire be coated with lead paint once or twice, all injury, except that which would be the result of severe pressure, is prevented. Plain iron wire, if coated with boiled luteo-oid oil, preserves it from rust for a time.

JERUSALEM CHERRY: C. X. We believe the name is sometimes applied to *Solanum pseudocapsicum*, but it is not very appropriate, seeing that the plant has nothing to do either with Cherries or with Jerusalem!

NAMES OF FRUITS: E. H. P. 1, Golden Pearmain; 2, Mère de Monage; C. Candy, Mabbot's Pearmain.—J. Harris. Fruit much bruised—not recognised.—H. J. A., Pordham. Round Winter Nonsuch.

NAMES OF PLANTS: Correspondents not answered in this issue are requested to be so good as to consult the following number.—R. S. *Bletia* hyacinthina.—C. S. & Co., Limited, Chick Pea, *Cicer arietinum*; Casa Blanca is probably not a Pea at all, but a bulblet of *Ornithogalum*.—*Neuchurch*, *Lælia anceps* Sanderiana.—S. S. *Lycaste macrobulbum*, illustrated *Bat. Mag.*, t. 4223, as *Maxillaria macrobulbum*.—*Novice*. The spiny crest of your very handsome spotted *Odontoglossum* seems to indicate some traces of hybrid origin, but it approaches *O. crispum* much nearer than *O. × Wilkesianum* usually does. The white one is *O. crispum*, and the other *O. luteo-purpureum*, which two crossed would give *O. × Wilkesianum*.—W. K. The varieties of *Cattleya Triani* sent are very indifferent. They may be better another year, but never good. *E. James*. 1, *Panax fruticosum*; 2, *P. lactioides*.—*E. S. Jersey*. Probably *Anagallis tenella*, but we cannot be sure without flowers.—R. C. H. It appears to be *Lælia anceps* Williamsii.

ORCHARD LAND IN DEVON: Devonian. We should not advise you to plant Apple trees on the crab, or Pears on the wilding Pear on the shallow black loam overlying blue clay, as such trees would at the best be short-lived, and the first-named would very probably get badly cankered when the roots reached the clay. It would answer for small fruits of all kinds, Figs as trees or standards, and Pears and Apples on dwarfing stocks. Good drainage in any would be necessary over the whole area, including the land that was once an orchard, and was drained forty years ago. The drains should go below, or into the clay. The 3-acre field of red loam seems to be even less likely to carry fruit-trees for any great length of time. It would be well before deciding to rent this piece to inspect some orchards planted on a similar formation in the neighbourhood. In any case, it would grow bush-fruit, Strawberries, and Figs, and Apples, and Pears, on dwarfing stocks, and no drainage would be necessary, the gravel being immediately under the surface-soil. The northern aspect of much of the land would be an advantage in delaying the opening of the flowers of the fruit-trees.

PANCRATIUM AND AMARYLLIS: C. R. W. We cannot find space in this column for full instructions. You should consult back volumes of the *Gardeners' Chronicle*, in which, within recent years, numerous articles on both subjects, especially the latter, have appeared.

POPLARS: N. C. In answer to your question, we give you the very latest information, taken from Britton and Brown's *Illustrated Flora of the Northern United States, &c.*, the first volumes of which reached us on the same day as your question. The following table gives the American species. The Carolina Poplar is the last on the list, and is most generally known as *P. monilifera*, which name you will find it most convenient to retain, but *deltoidea* is, it appears, an earlier name:—

- Petalotes terete* or channelled, scarcely or not at all flattened laterally. (POPLARS.)
- Leaves persistent, and densely and memtose beneath... .. 1. *P. alba*.
- Leaves glabrous, or very nearly so when mature, crenulate. Foliage strictly glabrous (except in *P. balsamifera* var. *canadensis*): capsule very shortly pedicelled.
- Leaves broadly ovate, rounded or cordate at the base... .. 2. *P. balsamifera*.
- Leaves lanceolate or ovate-lanceolate, mostly narrowed at the base.
- Leaves acute, short-petioled... .. 3. *P. angustifolia*.
- Leaves acuminate, long-petioled... .. 4. *P. acuminata*.
- Foliage densely tomentose when young; capsules slender-pedicelled... .. 5. *P. heterophylla*.
- Leaves strongly flattened laterally. (ASPENS.)
- Leaves coarsely undulate-dentate... .. 6. *P. grandidentata*.
- Leaves crenulate-denticulate.
- Leaves ovate or suborbicular, short-petioled... .. 7. *P. tremuloides*.
- Leaves broadly deltoid, abruptly acuminate.
- Leaves obtuse at the base; capsules nearly sessile... .. 8. *P. nigra*.
- Leaves truncate at the base; capsules slender-pedicelled... .. 9. *P. deltoidea*.

POTATO DISEASE: P. J. C. Many thanks for your reference. We do not think it has been proved that the bacteria of the wet-rot have anything to do with the Phytophthora. Assertion is not evidence.

TO KILL HYPOCHERIS RADICATA: E. M. Use rich mineral manures, such as sulphate of ammonia, superphosphate of lime, and the like; these, if applied for a few years, will cause the grasses to grow so densely as to smother out the weed.

VALLOTA PURPUREA: R. F. G. Pot the bulbs singly in 48's, or five in a large 32. If the bulbs are received when resting, do not let them remain out of the soil longer than can be helped, but pot them firmly in a mixture of two-thirds fibrous loam, one-third leaf-mould, and sand in sufficient quantity to ensure the passage of water. Let the drainage be good, but do not let it occupy much space. As re-rotting should not be done frequently, it is advisable to mix charcoal in pieces of the size of a Hazel Nut to the soil, and put a layer of it over the crock. The Valotta is a greenhouse bulb, whose leaves are evergreen, unless the bulbs are too severely dried off in the resting period, i.e., the winter season. In this respect it resembles the evergreen varieties of *Hippeastrum*, and like them it is well to rest it in a bed of spent tan, which prevents all overdriving-off. In the spring, when growth commences naturally, bulbs which have been less than three years in their pots should have their drainage examined, and put right if found to be defective; have the soil knocked off the upper part of the balls, and be re-potted with some fresh soil on the top in the same sized pot—clean ones, not the pots out of which they came. After affording the plants water to moisten the ball throughout, stand them on a shelf in the warmer part of the greenhouse, or in a cold pit from which frost is excluded. Ordinary attention suffices in the summer, indeed, the plant does best—after the middle of June—in the open air. A very nice effect is produced by planting a dozen bulbs of flowering size in a deep pan, 12 to 14 inches in diameter. There are several varieties, all more or less pretty.

WORMS: L. Schmitt. You might apply clear lime water to the land, and afterwards gather up the many worms that this will drive to the surface. Encourage the birds, and keep ducks in the garden; trench heavily the ground in a rough state. Try liming, for it may be clogged with half-decayed vegetable matter, which favours the increase of worms.

COMMUNICATIONS RECEIVED.—A. W. Y.—H. C. P.—E. H. J.—H. H. R.—J. D.—H. M.—Cross & Cross.—R. D. C.—W. A.—P. E. M.—J. H. M.—A. J. K.—A. D. W.—J. Anderson.—J. H. C.—W. H. G.—The ground in a rough state. F. S. (next week). N. E. B.—G. Hunter.—R. Sheffield.—E. C. E.—W. B. & Sons.—D. Bois Saint Mandé.—Atwood & Co.—A. E. G.—P. B.—L. F. de L.—A. F. H.—F. W. B.—J. H. Utrecht.—Street.—Co.—S.—R. M., Boston, U.S.A. (We do not consider Americans as "foreigners.")—W. E. B. Grenada.—J.—D. T. F.—J. O'B.—C.—R. C. H.—W. A.—J. W.—J. G. B.—E. W. G.—M. T. A.—H. W. H. White.—J. J. W.—J. G. B.—E. W. G.—A. C. F.—T. C.—H. D'Orban.



THE

Gardeners' Chronicle.

SATURDAY, FEBRUARY 6, 1897.

THE SURVIVAL OF THE UNLIKE.*

(Concluded from p. 70)

AFTER a consideration of Weismann's theories, Professor Bailey discusses the causes of variation under cultivation. There is primarily an excess of food-supply. "In short, the whole philosophy of the amelioration of nature rests upon excess of food-supply." "Secondly, it is a change of climate, and just as in nature special climatal conditions give rise to a peculiar facies to the plants within them, so "the same process of adaptation begins with domesticated plants the moment man takes them to climates of different kinds."

These remarks lead the author to make some very pertinent observations upon testing; for if a plant be wanted in different districts with unlike soils and climates, the "best tested" may utterly fail in certain regions though it flourish well enough elsewhere—as Mr. Bailey found with Strawberries only 3 miles distant! The fact is, that "each cultivator must test for himself, as he is the only person capable of knowing what varieties are best suited to the conditions of his land."

Two essays are devoted to insects and fungi, and the author points out that the great increase of these among cultivated plants is due to their finding such an abundance of host-material in cultivated areas compared to their restricted supply in nature, so that while man increases his crops, he unavoidably multiplies his enemies.

With regard to weeds, he points out the great importance of a rotation of crops as the best antidote; that the great spread of such a weed as *Salsola Kali* is due to a neglect of this fundamental principle of agriculture. The areas infested with this noxious weed is subjected to a continual cropping of Wheat, which allows the *Salsola* to grow; whereas it would be quite driven away by grasses.

In an essay on recent progress in American horticulture, the author gives very interesting details and statistics on the cultivation of Apples and Plums. These bring out the result that since they were first introduced from Europe the percentage of American forms has steadily risen, while that of the foreigners has declined. This proves how new and improved races have arisen, better adapted to the American soils and climates, affording more valuable fruit, so that the originally imported kinds cease to be cultivated. Besides this foreign source, large numbers of native wild plants are now cultivated, e.g., there are 200 varieties of native Plums. New species of Grapes are now coming into cultivation. "No less than 185 species of native plants for fruit or ornament were introduced into commerce last year."

The author begins the eleventh essay on the

national history of synonyms with the questions, "Is it possible for the same variety to originate twice? or is every new seedling a distinct variety? . . . Synonyms arise in three ways—by the bringing together of like plants of distinct origin, by the divergence or modifications of plants of like origin, and by the simple practice of re-naming. . . . The first two classes . . . are not only unavoidable, but they may serve distinctly useful purposes. . . . As a rule, the more synonyms a plant has, the greater are the assurances that it will thrive over a wide range of country, and in many diverse conditions; and in like manner, varieties which belong to well-marked tribes or families usually have the strongest or most virile characters." Mr. Bailey gives an amusing result of his attempt to simplify the nomenclature of Tomatos by reducing (by 50 per cent.) the numerous varieties to a few well-marked types. "But when I asked an experienced gardener for his opinion of the reduction, he remarked; 'Excellent! you have put similar kinds together, and I have ordered all the kinds which you refer to the Paragon! . . . So my effort, instead of lessening the number of varieties simply emphasized the value or characters of those which I had regarded as synonyms!'"

Hence issues a valuable result: that if a grower finds one of a type to succeed well with him, the probability is that other sub-varieties of the same type will also do so, as they will possess more or less the same constitution.

Essay No. 14 is on "Variation after Birth." As this has already been treated of in the *Gardeners' Chronicle*,* it need only be observed, that while Darwin's theory supposes that individuals are different when germinating, so that natural selection weeds out the unfit, "most plants start equal, but eventually come unequal." Indeed, it is obvious that the characters by which species are known are often not developed at all until the seedling has grown to maturity, as they may depend upon the flowers and fruits; i.e., long after the period when natural selection is supposed to act.

Essay No. 15 is headed "A Pomological Alliance," and is "a sketch of the relationship between American and Eastern Asiatic fruits." The author discusses the well-known fact that the flora of the Eastern States of North America is more nearly akin to the Japanese than that of the Pacific side. This is seen in allied species of plants and trees growing naturally in the two countries. Horticulture corroborates this, in that the Japanese Plum does better than the European. He concludes with a list of twenty-two Europe-Asian fruits, and twenty-one of Eastern Asian origin now cultivated in the United States.

In the sixteenth essay on horticultural geography, the author returns to the important question of studying the adaptability of varieties to geographical and local conditions. Of course, those are more pronouncedly different in a large country like North America than in England, yet we have quite sufficient variation of soil and climate in the British Isles to make this a more important matter for the consideration of horticulturists here, than perhaps at the present time obtains. Much disappointment may arise by the "promiscuous distributing of varieties over great areas. . . . I believe that the days of the nursery business, which aims to feed the whole country, are numbered. Separate nurseries for widely different localities will be necessary, and climate and environment must force the nurseries into

nearly as narrow limits as the adaptability of the stock which they grow." This suggests the idea of testing plants at Chiswick in very different artificially-made borders, by mixing clay, lime and sand, in unequal proportions, each of the three ingredients largely preponderating over the other two in the three borders, respectively.

Essay No. 20 discusses the old question—Do cultivated races die out? From a circular sent out on Apple-trees, the general reply was, that they are shorter-lived now than formerly; but when one investigates the supposed causes, they are reduced to eight, viz., a change of climate, a greater abundance of insects, also of fungi, high cultivation, a lack of adaptation, neglect, and bad methods of propagation and of pruning. Mr. Bailey refutes most of these, and concludes by saying:—"The chief particular causes appear to be lack of adaptability of varieties to regions and conditions, climates unfitted to the best development of the species, and lack of fertility of soil."

Part III. commences with the twenty-fifth essay, "Whence came the cultivated Strawberry?" The next two are called "The Battle of the Plums," and "The Evolution of American Grapes," and are of more interest to Americans than Europeans; while the twenty-eighth is devoted to the Carnation, and the twenty-ninth to the Petunia. The hybrid origin of existing forms of this last is well known; though he is not aware of a fact which was told the present writer by one of our most eminent florists, that the double form was unknown until it appeared suddenly both on the Continent and in England in the same season.

The last and thirtieth essay is devoted to the amelioration of the garden Tomato. This has proved to be a most variable plant. The study of all the forms of the larger sorts leads to the Cherry Tomato as the origin (*Lycopersicon cerasiforme*), and as five-sixths have red fruits, this was probably the original colour. Then follows an interesting history of the "Trophy," the result of twenty-four years crossing and careful selection. The Tomato, therefore, affords one of the best examples of wide differentiation into varieties from a single species; or the other true species (*L. pimpinelliforme*), or Currant-Tomato, appears to have had nothing to do with it.

Taking the book as a whole, it is a valuable contribution to the literature of the evolution of plants, for it is by one trained, not only in practical horticulture, but to look at plant evolution under the hands of a gardener, from a philosophical point of view. Although the author still says he accepts natural selection, yet when he describes all he sees going on around him, he (as it seems to us) practically ignores it as a necessary means in the origin of varieties, races, and species. *George Henslow.*

ORCHID NOTES AND GLEANINGS.

BULBOPHYLLUM COMOSUM.

This curious species has been sent to us for identification by several of our correspondents. The species is found in Eastern Burma, and on the Shan Hills (alt., 6000 feet), and to the recent importations from these hills its more frequent appearance lately is due. The stout ascending scapes are furnished at the top with drooping racemes of closely-set, small white flowers, each measuring about half an inch in length, and covered with short hair-like processes, the whole head having resemblance to a bottle-

* By L. H. Bailey (New York: The Macmillan Co., 1896).

* May 3, 1886, p. 678.

brush. It belongs to the deciduous section, the members of which require to be dried off for a time after the leaves fade, and which include *B. hirtum* and *B. auricomum*. A peculiarity of this section of *Bulbophyllum* is that the entire plant, leaves (especially when drying-off or dried) and flowers, have a delicate but strong odour of new-mown hay.

ODONTOGLOSSUM HALLI LEUCOGLOSSUM.

Odontoglossum Halli, which is called by some persons the grandest of the Ecuadorian *Odontoglossums*, may primarily be divided into two distinct sections, viz., that with the ground colour of the labellum yellow, with brown blotches, and that with a white lip, more or less spotted with chestnut-brown, the latter being usually called *O. H. leucoglossum*. Both sections are liable to much variation, probably, to a great extent, in consequence of its rather wide range of distribution in the Andes of Ecuador, and hence what are known as good or bad varieties frequently appear in every importation of the plants. A fine example is at the present time flowering in the gardens of Joseph Broome, Esq., Sunny Hill, Llandudno, who has kindly sent a bloom of it. The sepals, which are more than 4 inches across, are of a bright yellow colour, covered with large, irregularly shaped, red-brown blotches; the broader petals are likewise of a bright yellow colour, and furnished with numerous, small, oblong-shaped red-brown blotches; and the recurved tips of each segment are yellow. The white lip is more than 1½ inch broad, fringed at the margin, and decorated with chestnut-coloured spots, and the middle area of the lip has several large blotches of the same colour. The conspicuous crest is of yellow and white, marked with red lines. It is a handsome variety, and resembles, in almost every respect, the flower of *O. Halli Lindeni*, illustrated in *Lindenia*, vol. iv., p. 83.

ORCHIDS AT NEW HALL HEY.

By the kindness of G. W. Law Schofield, Esq., New Hall Hey, I had recently the privilege of carefully inspecting his fine collection of Orchids. The houses are full of healthy plants, including many rare and very fine species. The first range, in three divisions, is span-roofed, with sunken paths; and in the first two divisions are some finely-grown *Celogynes*, *Laelia anceps*, *L. a. var. Hardyana*, *L. a. var. Schroderia*, *L. a. alba*, *L. a. Dawsoni*, *L. a. Sandersoniana*, &c., in flower; also, the beautiful and rare pure white *Pleione maculata alba*, and many other species. The third division is filled with *Cypripediums*, and amongst these are some choice crosses. In flower were such plants as *C. insignis Sanderae*, *C. Charles Rickman* ×, with three fine flower-spikes; *C. Leyceiaicum* ×, *C. Arthurianum* ×, *C. vexillarium superbum* ×, *C. Ceres* ×, *C. Calypso* ×, *C. Lathamianum giganteum* ×, *C. Lceanum* in great variety, including the best forms of *C. Lceanum superbum* ×, *C. L. Maserelianum* ×, and *C. L. giganteum* ×.

In this division seedling *Cypripediums* are germinating, and growing luxuriantly. The second range of houses is also span-roofed, and in two divisions, one of which is devoted to the culture of *Dendrobiums*, but has become so over-crowded, that Mr. Schofield has had to devote an extra house to these plants. We noticed *Dendrobium illustre* ×, *D. Venus* ×, *D. Schroderianum* ×, *D. Aspasia* ×, *D. Cybele* ×, *D. melauodiscus* ×, *D. Juno*, *D. Rainbow*, *D. Luna*, *D. The Pearl*, in dozens or half-dozens. There are also some fine specimens of *D. nobile nobiliss*, *D. nobile giganteum*, *D. nobile Amesii*, *D. nobile Cooksoni*, *D. Wardianum album*, &c. The other division is devoted to *Cattleyas* and *Laelias*, including many fine hybrids.

The whole of this collection is well grown, and great credit is due to Mr. Schofield's head-gardener, Mr. E. Skill. A. J. K.

CALAMUS CILIARIS.

THERE are in cultivation species belonging to this genus which possess much beauty; but perhaps the most beautiful and useful of them all, from a decorative point of view, is the subject of this note,

which is a plant that should be grown in every stove. It would make an excellent plant for the dinner-table, or for exhibition. It is of slender growth, the stem measuring in diameter from a quarter to half an inch; the leaves are about 1 foot in length, and 6 inches in width at the widest portion, with their margins beautifully ciliated; the petioles are about 2 inches long, bearing a few small hooked spines, and sheathing at their base. When about 18 inches in height, it throws out from near the top of the sheath a very slender growth, as shown to the left of our illustration, which is covered with numerous small hooked spines to aid the plant in climbing. The accompanying woodcut (fig. 23) illustrates these

better be cut off, as they are liable to hang on to anything with which they come into contact. The plant is a native of India, and was introduced in 1869. *W. Harrow, Sheffield.*

AMERICAN NOTES.

(From our Special Correspondent.)

DEATH OF WILLIAM ELLIOTT.

WILLIAM ELLIOTT of Dey Street, New York, U.S.A., senior member of the firm of Wm. Elliott & Sons, died at his home on January 16. To those of the



FIG. 23.—CALAMUS CILIARIS.

climbers, also two flowering-spikes to the right upon the plant. The plant represented was from 5 to 6 feet in height, and grows in one of the plant-stoves in these gardens.

It is easily propagated from offsets which are produced somewhat freely from about the base of the plant. They should be detached when 4 or 5 inches in length, as when about that size they are almost certain to have a few roots upon them. These little offsets should be potted into small pots in a mixture of equal parts of loam, leaf soil, and sand, and be put into a close case in a warm-house; no bottom-heat being necessary in the case where, if rationally treated, they soon push their roots into the soil. When used for dinner-table decoration, the climbing tails had

English trade who had dealings with us, the name of William Elliott has been familiar for years, and with him passes away the last of the old school of New York seedsmen; as an auctioneer perhaps he will be best remembered by some, having been engaged in that line of business since 1855, when he entered into partnership with I. J. Young. William Elliott was born at Craillog, Jeilburgh, Scotland, on October 10, 1824; his father and grandfather having been gardeners, he was brought up to the same profession, being apprenticed at the Earl of Minto's gardens, near his birthplace. He was subsequently in the gardens of Sir E. Traveleyan at Wallington Hall, and later at Ripley Castle, Yorkshire. Coming to London he entered the well-known nurseries of J. & C. Lee at

Hammersmith, and the writer has often and again heard him repeat his experience there, and how he went to the Chiswick Gardens for his firm. After an unsuccessful attempt as a wholesale fruit salesman in Edinburgh, Elliott turned again to gardening at Sawley Hall, Ripon, Yorkshire, and later went to Liverpool to the Skirvings' Nurseries. On the persuasion of his friend, Kerr, he sailed for the United States in 1851, and was variously gardener, florist, and market gardener near New York. In this last essay he lost what money he had, and turned to

A SCARCITY OF ORCHIDS.

In the very nature of things, when one considers the facts that Orchids are of such slow growth, and that they have been gathered by the ship-load to satisfy the cravings of the orchidophiles of the temperate climes, I say, in the very nature of things, the end must come. The forests which contain the gems are not unlimited, and unless new, untried districts be opened up, a halt must be called to this greed of collecting. A letter lately received from the collector, J. E. Lager, who is at present in the U. S.

a direct charge against the tactics of some European firms, whom he charges with "over-zeal" in this wise:—

"Men are sent out with instructions to remain in one place three or four years, or even more, the consequence of which is that the owners of the forests simply, and very naturally, think there are millions to be made in the business, and prohibit the extraction of the plants unless the collector is willing to pay tribute." All this in reference to *Odontoglossum crispum*.

Cattleya chocoensis is still plentiful, but becoming rare as the forests are cleared for pasture; *Cattleya Mendeli* is fast disappearing. *Cattleya Schroderi* is comparatively abundant, but its extraction is expensive. The letter which appears in full in *American Gardening*, for January 23, closes with the following pertinent remark: "The day is not far off when these beautiful plants will be extinct." I have quoted freely from the communication referred to, as it seems to contain matter worthy of serious attention by plant-lovers everywhere, and it would be well that prominence be given to the caution. It is not often that we are able to place before the public the actual thoughts of these intrepid men, who carry their lives in their hands while they are hunting out treasures for our greenhouses and stoves.

THE TARIFF QUESTION.

Politics cannot be kept out of horticulture in the United States of America, and on certain questions of "tariff" there are many disunited conditions. President elect, Wm. McKinley, is well known as a protectionist, so all the trades well loaded up with imported stock are seeking to be able to place goods on the market next sea on with the guarantee of protection from the foreigner. Whether this be dealing in Palms, Azaleas, fruit-tree stocks, Roses, or what not, a high tariff is being agitated for by nearly all sections, and the prospects are that a high tariff will rule.

MYRIOCARPA LONGIPES.

The accompanying illustration (fig. 24) represents a very remarkable and peculiar plant which flowered in the Victoria regia-house of the Sheffield Botanical and Horticultural Society's garden during the summer of last year. The flowers are small, and are arranged upon the long racemes which extend to the bottom of the pot as seen in the illustration. These ribbon-like racemes were nearly 5 feet in length; when young, they are of a whitish or cream colour, changing to a shade of green as they become old, hundreds of minute flowers being arranged on the racemes. The foliage is large and ornamental, the blade of the leaf measuring from 18 to 20 inches in length, and from 9 to 12 inches in width at the widest part; and the margin of the leaf is serrated. Their colour is a light green, with parts of a dull, silvery hue. The petioles are about 6 inches long. Cuttings of the plant strike without much difficulty in a warm propagating-case, if a slight amount of bottom-heat be afforded; and plants can be grown in one year to the size of that shown in the illustration from cuttings. The plant belongs to the natural order Urticaceae, and is a native of North and South Tropical America. *William Harrow, Sheffield.*

CRATÆGUS.

It is common with most hardy trees and shrubs, the Thorns fruited last year with wonderful freedom. It is some years since their autumnal beauty has been so great. The respective merits of the different species have, in consequence, been clearly shown, and the present time seems suitable for discussing the genus; more especially as there appears to be a good deal of confusion in gardeners as to the identity of many of the species. London, fifty to sixty years ago, reviewed the genus fully, and his work has retained much of its value, a large proportion of the species being then well known under names they still retain. Lindley, too, paid special attention to the



FIG. 24.—MYRIOCARPA LONGIPES: WITH PENDULOUS RACEMES OF SMALL GREENISH FLOWERS.

Canada as a farmer, but quickly changed his mind; and after being about New York for a time, entered the seed business in 1854. The firm of Young & Elliott, seedsmen and horticultural auctioneers, was well known in England till 1889, when, owing to the death of the senior partner, Elliott took into the concern his two sons, by whom the business will be carried on. The career of William Elliott has been full of incident, and nothing pleased the old gentleman more than to recount to those who were from "over the water" something of what he had seen in an eventful life. A Scot to the backbone, he was a trusty friend, a severe and caustic critic, but without ever ready with a kindly word.

of Columbia, strikes the alarm-chord. "Five years ago," he writes, "I myself thought that the regions where *Cattleya Triandri* occurs, and also that of *C. gigas*, were inexhaustible. . . . Now, in the very best districts, the plants are very much retired, causing heavy expenditure to extract them. Freight have increased 100 per cent." This last item is accounted for by the scarcity of beasts, who do the hauling, because they are used up in the largely-growing Coffee industry; moreover, this Coffee industry is extending at the expense of the Orchid-forests, "for it happens that the Coffee region is exactly the Orchid region."

Mr. Lager, whose *bona fides* none will doubt, makes

Thorns, and figured many of them in the *Botanical Register*—a work that is well worth consulting in connection with the genus. At quite a recent date the American species have been described by Professor Sargent, and admirably figured in the *Silva of North America*. But no easily-accessible descriptive account of the whole genus has been published in the English language for a long time. It seems, therefore, worth while to bring together a few notes on all the species worth growing; and there are very few of which so much cannot be said. The names here used are those adopted at Kew, the collection there being probably the most complete in species and varieties, as well as the most correctly named in existence.

Crataegus is a genus confined to the northern half of the globe, and is in number of types most abundantly represented in North America. Another well-defined group (of which *C. Azarolus* may be taken as the type), comes from the Orient. The remainder are scattered over Europe and North Asia, and two or three species reach North Africa. The most widely-spread of all the Thorns is *C. Oxyacantha* the Common Hawthorn, which occurs wild in all the three continents of the Old World. In botanical relationship they come nearest to the *Modiars* (*Mespilus*)—indeed, the tree known as *Mespilus grandiflora* or *M. Smithii* is surmised to be a natural hybrid between the two genera. They are all trees of bushy or rounded habit, varying from a few feet to 30 feet in height; for the most part, however, ranging between 10 and 20 feet. The flowers are white, or nearly so, and are generally fragrant, although the fragrance is not invariably agreeable. It is not necessary to say much in regard to their cultivation. They all like a free open soil of good depth, which should be of at least moderate richness. All of them, no doubt, are more healthy and longer lived when raised from seeds; but owing to the length of time seedlings require to reach the flowering age, they are very frequently budded standard high on the common Hawthorn. This method of propagation does not appear, in the case of the Thorns, to have the marked disadvantages that can so frequently be noted in connection with hardy trees and shrubs that have been grafted or budded. The numerous varieties of *C. Oxyacantha* are almost necessarily increased in this way. The comparatively small size of the Thorns, as trees, renders them especially well adapted for gardens of limited extent; and their two seasons of beauty—in flower and in fruit—give them a special claim to the notice of planters.

The following is a list of the species here dealt with:—

OLD WORLD.

- C. Azarolus* (syn. *C. Aroia*).
- C. heterophylla*.
- C. melanocarpa* (syn. *C. Oliveriana*).
- C. nigra* (syn. *C. Lambertiana*).
- C. orientalis* (syn. *C. odoratissima*, *C. sanguinea*).
- C. Oxyacantha* (combining *C. monogyna* and *C. oxyacanthoides*).
- C. pinnatifida*.
- C. p. var. major* (syn. *C. californica*, *C. Layi*, *C. Korolkowi*, *C. chinensis*, *C. tartarica*).
- C. Pyracantha*.
- C. sanguinea*.
- C. sinica* (syn. *C. marocana*).
- C. tanacetifolia*.

NEW WORLD.

- C. Carrierei* (syn. *C. Lavalloii*), probably a hybrid.
- C. coccinea* (syn. *C. rotundifolia*).
- C. e. macracantha* (syn. *C. macracantha*).
- C. cordata*.
- C. Crus galli*.
- C. Douglasii*.
- C. flava*.
- C. mollis* (syn. *C. coccinea* var. *mollis*).
- C. punctata* (syn. *C. tomentosa* var. *punctata*).
- C. spatulata* (syn. *C. microcarpa*).
- C. tomentosa*.
- C. unidiflora* (syn. *C. parvifolia*).
- C. viridis* (syn. *C. arborescens*).

THE OLD WORLD SPECIES.

C. Azarolus.—A species of great beauty, of much the same character as, and nearly allied to, *C. tanacetifolia* and *C. orientalis*, and like them, a native of the Orient. The leaves are very deeply cut into five or seven somewhat rectangular lobes, and are of a greyish-green colour, the mature leaves being nearly or quite glabrous above, but pubescent beneath. The flowers are white and showy, appearing in May and June. The fruits are $\frac{3}{4}$ to 1 inch across, globose, and vary in colour from orange yellow to scarlet. This is a small tree 10 to 15 feet high, and is a most desirable species. The *Crataegus* figured by Lindley in the *Botanical Register*, t. 1897, as *C. Aroia* is now considered to be a yellow-fruited form of *C. Azarolus*. The species is cultivated in southern Europe for its edible fruits, which show great variation in size and colour.

C. heterophylla.—An interesting Thorn, and distinct, on account of its variously shaped leaves, some of which are narrow-oblong, rounded or pointed at the apex, and almost or quite entire. Others are larger, rhomboid in general outline, but bent into deep, pointed teeth. The small, entire leaves are characteristic of the fruiting branches; the larger, deeply-toothed ones appear on strong sucker-shoots, and are at the base a pair of large, curving, toothed stipules; there are, however, plenty of leaves intermediate between these two kinds. The fruit is ripe towards the end of September, and is of a bright rich red, ovoid, and about $\frac{3}{4}$ inch long, the calyx-lobes being triangular and pointed. The species is a native probably of south eastern Europe or the Orient. It has been suggested that it is a hybrid between the one-seeded variety of the common Hawthorn (*monogyna*), and one of the *Azarolus* group. It is a small tree of somewhat erect growth, and produces its abundant white flowers in May.

C. melanocarpa (*C. Oliveriana*).—Both by Loudon and Lindley this Thorn was considered to be a variety of *C. Oxyacantha*; the latter figured it in the *Botanical Register*, t. 1933, as *C. Oxyacantha* var. *Oliveriana*. The leaf is of much the same shape as that of the common Hawthorn, but is downy on both sides, especially beneath, and of a greyish colour. The young wood also is downy. The fruits are very plentiful, and about the size of common haws, but are black, and covered with short hairs; they are ripe in September. This is a distinct-looking small tree, a native of the Caucasus.

C. nigra.—A handsome species, which is a native of Hungary. Its wood is covered with a dark grey tomentum; and the spines, which are not very abundant, are stout and straight, and under half-an-inch in length. The leaves are very downy beneath, especially on the veins and midrib, and have a well defined petiole; the blade is 2 to 4 inches long, broadly ovate, lobed, and coarsely toothed. At the base of the petiole there are two somewhat sickle-shaped, deeply-toothed stipules. The flowers appear at the beginning of May, and are white, but turn a purplish shade with age. The fruit ripens early, and is black, and about the size and shape of a Black Currant. *C. nigra* is a round-headed tree, 15 to 20 feet high, and was introduced in 1819.

C. orientalis.—A species having much the same appearance as *C. tanacetifolia*, but easily distinguished from it by the absence of mossy bracts at the base of the fruit. The leaves are $\frac{1}{2}$ to 2 inches long, very downy (as is also the young wood), and lobed almost to the midrib, each lobe having several coarse teeth at the top. The stipules are large, curved, and deeply toothed. The white flowers are borne towards the end of May. The fruits, which become ripe in September, are slightly flattened like an orange, and measure about three-quarters of an inch in thickness; they are covered with pubescence, and the colour is either bright yellowish-red or dark dull red, according to the variety. Lindley figured the dark red-fruited one as *C. orientalis* (*Botanical Register*, t. 1852), but it is better distinguished as var. *sanguinea*. Subsequently, and in the same publication (t. 1885), he figured the yellower fruited variety as *C. odoratissima*, which may now stand as the varietal

name. The branches sometimes terminate in a spine, otherwise they are nearly unarmed. The species was introduced from the Levant in 1810, and is a small spreading tree 15 to 20 feet high. *W. J. Bean*.

(To be continued.)

PLANT PORTRAITS.

BEGONIA MARTIANA, *Garden*, Dec. 12.

CATLEYA × MASSILIENSIS. A cross by M. Maron between *Catleya Trianae* (probably) and *C. Dowiana aurea*. Segments narrow, spreading; anterior lobe and lip undulate with a crimson blotch; throat, yellow line. *Beris Hortense*, January 1.

COLONIAL NOTES.

THE NEGLECT OF NATIVE PLANTS BY COLONISTS.

YOUR editorial headed "Colonial Horticulture" in the *Gardeners' Chronicle* of November 28, 1896, deserves the fullest sympathy from all of us who are connected with the horticulture and botany of the British West Indies. Our several botanical gardens could do much in cultivating and furthering the improvement of our wild plants of horticultural merit; and much creditable work in this direction is doubtless often done. It seems the same with us in this part of the world as it is, or was, in Australia. Intense enthusiasm is shown by colonists, even by those who have never visited Europe or America, over *Chrysanthemums* and the like; but little notice is taken of indigenous floral beauties growing at our very door. This retards in a great measure the cultivation and improvement of the beautiful forms of vegetation. These remarks I make are founded on personal experience and observation.

EUPATORIUM ODORATUM, L.

At the present moment, the hedges and open places round about Grenada are one mass of flowers and bursting buds of this plant. Their lilac-coloured flowers are the predominating feature among the flowering plants here at the time of writing, especially on the low levels near the sea. In shady positions the plants grow into a half-climber, climbing about among the nearest shrubs. It is, of course, an old favourite at home in hot-houses, for I saw it mentioned quite recently in the *Gardeners' Chronicle* as being one among a selection of plants at an exhibition; and I knew it well in the Old Country many years before I saw the plant growing in its native wilds. It is locally called the "Christmas Bush." *W. E. Broadway, Grenada, B.W.I., January 7.*

VEGETABLES.

BUNYARD'S EARLIEST DWARF PEA.

This is a variety that I have grown for some years, and so far it has always proved very hardy, producing heavy crops of good-flavoured Peas. Its height is about $2\frac{1}{2}$ feet, and the pods contain usually from eight to ten seeds. For the earliest crop, I sow the seed on trenched ground, making the seed-drills firm at the bottom, believing that by so doing I get the plants to grow more sturdily, and withstand frosts well. For several years I have been a great advocate for using trenches in Pea culture, especially for the mid-season sowings, and placing at the bottom a thick layer of manure. Usually with this kind of treatment the crops are good; still, I have my doubts whether in a very dry season the crops are as good as would be the case if there were less manure used, and the soil made firmer. As a rule, I find the haulm is inclined to be too rank and sappy, with the result that the flowers do not set as well as when the stems are of moderate strength. Telephone makes a good second early, but I have not succeeded with it for later use, excepting for the very latest supply—when I have had it, indeed, very good. Last year, although a bad year for Peas, Goldfinder and No Plus Ultra did very well, but the best to withstand the drought were Champion of England and J. Maclean, both old, well-tried varieties. I intend to sow Peas on a much firmer, deeply-worked, rich soil. *H. Markham.*

CAULIFLOWER AND EARLY BROCCOLI.

It is not often that we are favoured with mild weather, as was the case this year up till January 16, for up to that date there had scarcely been sufficient frost to check the growth of either late Cauliflowers or early Broccolis, so that we were enabled to keep up a continuous supply to the kitchen from the open ground till real wintery weather set in. Last summer, as most gardeners will well remember, was not the most favourable for establishing young plants of these, especially the period between June and the end of August. May was a very dry month, and growth was consequently slow, and though June was showery, there was not sufficient rain to thoroughly moisten the ground, particularly where it had been recently turned up and exposed to the weather. There is a vast difference in the working of soils, and gardeners have to make themselves acquainted with this if they would work in a profitable manner; and as the preparing of the ground for each crop adds much to the success or failure of the same,

the plants should never be allowed to touch each other even in the seed bed. One great failing is, that seed for various reasons does not cover sufficient ground, sometimes on account of want of space, at others through carelessness in sowing. To keep up a continuous supply, it is not so much the quantity sown at one time as the using of the proper varieties to succeed each other. There are now a number of varieties of autumn and winter Broccoli that will resist a certain degree of cold, on account of their close, compact hearts, and the leaves folding over close together. Snow's was formerly considered to be one of the best for use in the early winter, and is so still where the true stock is kept. The time of sowing the seed has also much to do with keeping up a succession, as it is almost useless to sow a late variety early with the hope of preventing a blank; but early varieties sown late and kept on growing, will prolong their season. There are, however, exceptions in this case, for if the seed of late Cauliflower be sown early, the plants will turn-in just at a

hold of the plants seriously, much trouble is experienced in keeping them through the winter. As a rule, however, if the early varieties are taken up in the autumn and put close together, so that they may be covered with mats and litter, which afford occasional supplies even in hard weather; and in mild weather they turn in much faster, so that if either cut and placed in a cellar, or pulled up and hung in a shed out of the way of frost, they are found to be good eating. *H. C. Prinsep.*

PHILADELPHUS LEMOINEI VAR. "AVALANCHE"

This is a beautiful gain of M. Lemme of Nancy. It is a hardy shrub, attaining a height of 5 to 6 feet, with decurved branches, small leaves, and fragrant white flowers. The illustration (fig. 25), taken from a photograph, shows well the habit of the plant.

THE PEACH OUT-OF-DOORS.

The subject mentioned by your correspondent, Mr James Mayne, had my consideration some years ago, and caused me to adopt on a small scale invisible wire-netting of the widest mesh, and of fairly stout wire. Its advantages over the usual method of wiring are appreciable on reflection, that the Peach and Nectarine trees adapt themselves to this system, which allows all the fruiting-growths to be secured with precision as required, but to attain which, the usual style of wiring is less amenable. Morello Cherries would probably also answer, whereas for other wall-fruit, having only spurs to deal with, the separate wire-system has greater advantages.

The desire to see the trees so close as to be almost or actually in contact with the wall, does not seem to me well justified, as I fancy sufficient, if not even greater, heat in summer is to be found at several inches from the wall by assistance of the natural radiation. My idea is, that having temporarily tied the tree back, strong and rather long, hook-shaped staples should be driven into the wall at the extreme top of the space to be covered by the tree, the wire-netting fixed, after which the stretching downwards, and securing by similar staples at the base and sides is very simple. If suitable piers are provided in the wall having 3 to 4 inches extra thickness, they would lend themselves to fasten sides of netting to their faces even yet more easily. The number and strength of the staples must, of course, be regulated by the height of the wall and the width of the space. After the insertion of a moderate number of these latter, their number should be added to after re-tying the tree wherever its trend and bend disturbs the surface-level of the netting, or wherever the force of the wind may indicate weakness. The location of the tree at several inches from the wall will also mitigate against depredations by insects, and keep the whole generally cleaner than close wiring or nailing to a wall.

For the purpose of strengthening the fabric in the case of walls being high, a pair of thin rods fixed crosswise would be a great improvement, if tied to the netting here and there; or since of late years thin Bamboo canes have become very cheap, these could take the place of rods with even greater advantage. The number of staples would be much reduced thereby, one of which in the very centre holding the canes at their points of crossing would be very serviceable.

I should be quite satisfied to adopt the plan on a larger scale, as it has several advantages, and hardly requires the entire loosening of the trees, except at long intervals, the operation of washing the tree being done with relative facility on having the tree fixed at 3 to 4 inches from the wall.

Where piers exist, the monotony of a long Peach-wall would be greatly relieved by a series of girdler-trained Pear trees of the finest and latest varieties, to be grown on the piers, and (even the latter may be absent entirely, and the same effect be produced by Pear and Peach trees alternating. *H. R. H. Forest Hill.*

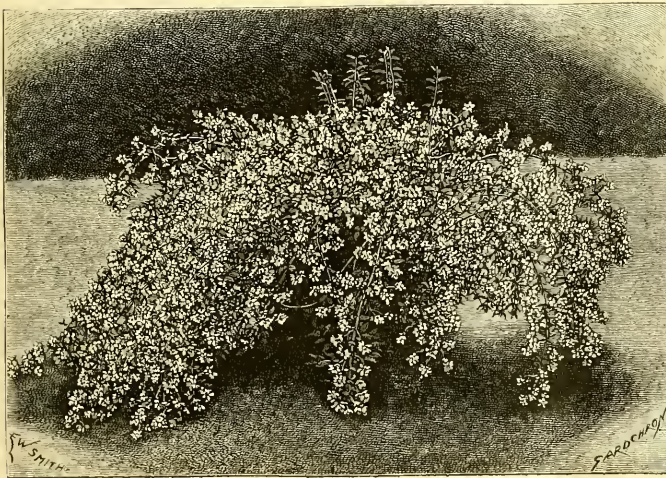


FIG. 25.—PHILADELPHUS LEMOINEI VAR. "AVALANCHE."

this branch of gardening must not be neglected. To retain the moisture in the ground, it should be worked in the autumn or winter, so that it may become consolidated again before the dry weather sets in; but where so many crops have to be taken from the same plot, and in close succession, it is very difficult to treat all of them as one would wish. Where there is not this necessity for such heavy cropping, there ought not to be any trouble either in getting crops in at the proper time, or on suitable ground. Some gardeners plant Broccoli after early Peas or Potatoes, and so on; but it would well repay to reserve a plot for those that has not been provisionally cropped that year, if possible—or failing this, to plant them between the early Potatoes as soon as they were earthed up, allowing a greater distance between the rows for that purpose. As late Broccolis occupy the ground for a long time, it is essential, if fine heads of close texture are to be produced, that the ground be in good heart, and that sufficient space be allowed between the plants for the foliage to develop to its full size. There is much art, too, in keeping the plants sturdy, for the closer the foliage is to the ground the stouter the stem. To attain this end,

time when it is most difficult to produce fine heads from the other varieties. For example, in a dry season much better Cauliflowers are produced in August and the early part of September, from late varieties sown on a warm border in March, than from other varieties the seed of which is sown in April or May, for the simple reason that the plants have got established before the ground has become hot and dry. From August to the middle of last month, there was no gap in the supply, which began with Autumn Giant, followed by Autumn Mammoth, Michaelmas Whites, Yeitch's Self-protecting, Christmas White, Vanguard, and Winter Mammoth. The last four are Broccolis, the seed of which was sown early in the middle of March, and in April for succession. They were all lifted in the early part of November, and placed together with their heads towards the north, so that protection might have been afforded them if severe weather had set in. Since January 16 very cold rough weather with wind from the north and north-east has prevailed, putting a stop to the growth of the plants for the present, and obliging us to depend for supplies from protected plants. Broccoli is such a precarious crop that in places where the frost takes

CULTURAL MEMORANDA.

COLEUS FOR EXHIBITION.

COLEUS is one of our finest foliage plants, and for the ornamentation of conservatories it is very effective when mixed with Palms, Ferns, and other green-leaved species. Some of the recent varieties are shaded and blotched with exquisite colours on grounds of cream, green, purple, and reddish shades. It is well to strike the cutting in the month of March or April, according to the amount of convenience at command, in a temperature of about 70° or higher, placing each cutting in a thumb-pot in soil consisting of one part loam, and one of leaf-mould, one of coarse silver-sand. Till rooted the cuttings should be kept close, and potted-off as soon as rooted, and shifted on till the plants reach the required size, keeping them always close to the glass. A plant in a 3-inch pot is large enough for general use, but for exhibition they may reach 16's, making fine specimens if nicely staked out, and the tip pinched occasionally to produce laterals. When the pots get filled with roots, liquid manure-water should be afforded about twice a week, and there is no better than Clay's, in which a small quantity of soot is squeezed through a bag. Always use tepid-water to the plants. The secret of success is to get pot-bound plants, and then, by using plenty of manure-water, and heat and light, to keep them in good condition. The house should be shaded with light shading in the hot days of summer, as the sun is apt to scorch the foliage if this be omitted. *A. W. Young, Steccage.*

AMERICAN PALMS.

THE PALMETTO.—It is remarkable that Sabal Palmetto, which might be expected to be the hardiest of all arborescent Palms, has remained so rare in gardens. A plant has long been cultivated in the Palm-house of the Royal Gardens at Kew, in England, and the species is said to be established in Ceylon. In California, where nearly all the Palms of temperate regions grow vigorously, it has not proved a success; and it appears to be unknown in the gardens of Southern France and the Riviera, although it is said to flourish in those of Southern Italy.

"On June 23, 1776, a force of less than one hundred Carolinians, under command of Moultrie, protected by the rude fortification on Sullivan's Island in Charleston Harbour, made of the trunks of the Palmetto, repulsed the attack of a British fleet under command of Sir Peter Parker; and when the State of South Carolina was organised, the State-seal, which was first used in May, 1777, was made to commemorate this victory. A Palm-tree growing erect on the sea-shore represents the strength of the fort, while at its base an Oak-tree torn from the ground and deprived of its branches recalls the British fleet built of Oak timber, overcome by the Palmetto."

Washingtonia.—First collected by Dr. Edward Palmer in 1837 in secluded crevices of the mountains about Guaymas, and subsequently at La Paz, Lower California. *Washingtonia Sonora*, which is still very imperfectly known, is described as a tree 25 feet in height, with a trunk a foot in diameter, and glaucous, filiferous leaves, 3 or 4 feet in diameter, borne on comparatively slender petioles, beset on the margins with variously curved spines, connected by a web of floccose hairs. The spadix is shorter, more slender, and more sparingly branched, and the perianth is thinner and more scarious than those of *Washingtonia filamentosa*. The seeds, which are flattened-globose, and about an eighth of an inch long, are used by the Indians of Lower California as food.

Another species, *Washingtonia robusta*, has been described (H. Wendland, *Berlin Gartenzeit.*, ii, 198 (1833); André, *Rev. Hort.*, 1853, 401, f. 73; 1895, 155. Watson, *Proc. Am. Acad.*, xxv, 136; S. B. Parish, *Garden and Forest*, iii, 52, 542; *Zool.*, iv, 350; Orenutt, *W. Am. Scientist*, i, 63, 74). *Washingtonia robusta* appeared about 1863, in Linden's nursery in Ghent, among a number of plants of *Washingtonia filamentosa* which were raised from

seed believed to have been obtained from lower California, and may be a seasonal form of this species, as is now usually believed, or more probably, a species from lower California, still unknown in a wild state. In gardens, where it has not flowered, *Washingtonia robusta* is a more vigorous, and more rapid growing plant than *Washingtonia filamentosa*, and its darker green and more lustrous leaves on shorter petioles give it a more robust appearance. *Sargent's Sylva of North America*, vol. x., 1896, p. 42, &c.

THE WEEK'S WORK.

PLANTS UNDER GLASS.

By G. H. MATCOCK, Gardener, Luton Ho, Luton.

Cyclamen.—The plants that were raised from seeds sown in September should be pricked-off into shallow pans, in a mixture of leaf-mould and sand in about equal parts, then afforded tepid water carefully, and plunged to the rim of the pans in a bed having a heat of 65°. Once a day, if bright, the plants should be lightly syringed, and air afforded in small quantities. *Cyclamen* plants which are in flower may be assisted with Clay's or some other fertilizer, and be kept in a light house, whose temperature does not descend below 43° at night, nor rise higher than 60° by day.

Freesia.—Those which have passed out of bloom may have a dressing of artificial-manure to assist the formation of the bulbs, if it is intended to flower them next year. Stand the section on a shelf near the glass in an intermediate-house. When the leaves indicate the cessation of growth, gradually withhold water at the roots, afterwards turning the pots on their sides in the full sunshine.

Gardenias.—Those plants with flower-buds set may be given a somewhat higher temperature, and careful watering, but no strong manures, or the flower-buds will be liable to drop off.

Palms.—The amount of artificial heat used during frosty weather favours the increase of insects infesting these plants, and a careful examination of the leaves should be made at short intervals of time for Thrips and red-spider, destroying the first-named by fumigation, and the latter by Gishurst's Compound-soap at a temperature of 70°, applied with a sponge. Maintain the Palm-house at 55° by night, and 60° by day. Any plant requiring re-potting may soon be taken in hand, over-potting being avoided. Plants which may have been undisturbed for some years are benefited by weak manure-water being sometimes applied, and occasionally one of soot-water. Other conditions being favourable, this will be all that the Palms require at this season.

Campanulas.—Avoid dampness and drip, or decay may set in among those that are being wintered in cold houses or frames. A few specimens of *C. pyramidalis* and *C. p. alba* for early flowering may be placed in a cool-house, and brought on gradually, and after a time with a slight advance of heat. After the spikes are well advanced, the energies of the plants may be increased by the occasional use of manure-water; and on no account must the plants become drawn, or the roots lack water. *Campanula Medium* (Canterbury Bells), treated in the same manner make useful subjects for brightening the conservatory, and well repay the labour spent on their cultivation. A few stock plants of *Isopyllis alba*, if broken up, the pieces placed in small pots in heat, will soon form graceful subjects for filling baskets, or trailing round the side stages of the conservatory, looking very nice when thus associated with Musk. The plant is of easy culture, and pretty withal.

FRUITS UNDER GLASS.

By F. HARRIS, Gardener, Eastnor Castle, Leicestershire.

Figs in Pots.—Trees that were started in November will now be fast swelling their fruit, and in order to obtain large, fine Figs, these should be freely thinned. If fruits are plentiful all over the trees, not more than one, or at most two, need be left on each shoot, which should be those nearest the base of the shoot, provided these are well developed. All trees so cropped should be given a liberal top-dressing of good loam, a few horse-droppings, and a few half-inch bones, into which the young roots will

quickly enter. Copious waterings of warm liquid manure may also be afforded. Use the syringe freely twice daily in sunny weather, and thoroughly damp the paths, walls, &c., when it is dull, the bottom-heat being kept up to 70° by the additions of fresh materials, and the night temperature should range about 60°, with a rise of 10° by day. Rub out all side-shoots as soon as visible, thereby concentrating the energy of the plants in the right channels.

Succession-houses.—The second house should now be started with a temperature of 50° at night, affording the borders a good soaking of tepid-water, and syringing the trees twice daily.

Figs in later houses should be cleaned, and the branches fastened to the wall, &c., and kept very cool; but exclude frost from the house, and afford sufficient water to prevent the shrivelling of the shoots.

Melons.—As sun-heat increases with the advance of the season Melon plants will make rapid progress, and every facility to enable them to reap the benefit of these improved influences should be afforded by keeping the roof-glass very clean and bright, keeping the soil moderately moist, with plenty of moisture in the air of the house, and gradually raising the temperature to 65° to 70° at night if mild weather prevails, but on frosty nights 5° lower than this will be preferable, too much heat leading to an attack of red-spider. Let the bottom-heat remain steady at 75° to 80°, by the addition of fermenting leaves and dung, taking care that the rankness of the manure is exhausted, otherwise the young foliage may suffer. Seeds may now be sown according to instructions given in a previous Calendar.

Cucumbers.—The present is a good time to raise plants to replace those which have borne fruit through the winter. Young plants make rapid progress after this date, soon coming into fruit-bearing, and it is better to plant young plants than to take the trouble to try and renovate old ones. The Cucumber-house that will be occupied by the fresh plants must be well cleaned before these are put out. The following compost is a good one for Cucumbers: three parts good fibrous loam, one part of prepared horse-droppings, a little lime-rubble, and 4-inch bones added. If the loam be close and heavy, a little leaf-mould or peat may be used with it. Remove the soil to the house some time before planting, that it may get warmed. Make the mounds about 4 feet apart, and these should be rather small at first, to prevent any of the soil becoming sour before the roots have penetrated it. Small top-dressings may be given at short intervals afterwards with a better result. For general requirements and continual bearing, the varieties Lockie's Perfection and Telegraph are two of the best. When the plants have commenced to grow freely, they will require abundance of water, and by keeping a temperature of from 60° to 65° at night, and a bottom-heat of 70° to 75°, together with a moist-growing atmosphere, the plants may be kept healthy and fruitful throughout the summer.

THE KITCHEN GARDEN.

By W. PORE, Gardener, Hitchlers Castle, Newbury.

Early Peas.—The first opportunity should be taken when the soil is workable to sow early varieties on a warm border, or failing that, in the most sheltered quarter of the garden; this sowing will come into use after those sown in the autumn, or in the winter in pots. Some of the early varieties, as Chelsea Gem, Early Giant, or English Wonder should be chosen for the present sowing, for being dwarf in habit the rows may run from 2½ to 3 feet apart, which admits of some catch crop coming between, as Lettuce and Radishes. If tall Peas are preferred, a space of from 5 to 6 feet is not too much from row to row, and Ringleader or William I. are the varieties to select. Peas sown in the autumn will probably have reached 1 or 2 inches in height, and should be earthed-up and staked, the shelter thus afforded being of great service. A dressing of fresh soot, or a slight sprinkling of artificial manure along the rows before earthing-up, is also beneficial. The young tops being devoured by sparrows in many gardens, a few lines of black-cotton as a preventive should be stretched along the rows, just clearing the tops of the Peas.

Cabbage, Spinach, &c., sown in Autumn.—Look over the Cabbages planted in the autumn, filling up vacancies from the seed-beds, and then afford the Cabbage-quarter a dressing of guano, soot, or some

suitable artificial manure, and stir the land with a hoe or digging-fork. Spinach which has afforded gatherings will derive benefit from similar treatment, and will then afford other pickings in the early spring months, when other green vegetables are usually less plentiful. Beds of Lettuce on warm borders should be cleared of the decayed leaves, the surface stirred with a hoe or hand-fork, and vacancies made good from the reserve plants; or, failing these, by taking up an outside row or two for the purpose, as besides the waste of room caused by patchy crops, they have a shabby appearance.

Root-stores, &c.—The root-store should be examined, decaying roots removed, and fresh growths starting from the crowns of Beetroot, Carrots, &c., broken off. Parsnips, Salsify, &c., left in the ground in autumn should be lifted, and stored in sand in a cool shed, thus affording the opportunity to the gardener to dig and manure the land. Onions in store should have the decaying bulbs removed, and those starting into growth put aside for present use, otherwise planted thickly in rows 1 foot apart to afford tops for kitchen use in early spring.

Carrots, Kidney Beans, &c.—As soon as the earliest sown Carrots show through the soil, slight ventilation should be afforded in favourable weather, and the soil sprinkled slightly with soot, to deter slugs molesting the plants. Thin the plants before drawing takes place, leaving them about 2 inches apart. Continue to make up hot-beds for early salads, vegetables, &c. A good sowing of Kidney Beans may now be made, as with the increasing sunshine and length of the day, forcing is much easier. The Kidney, or French Bean, needs a bottom-heat of 65° to 70°, and top-heat a little in advance of these figures. When potting, let the soil be rich and nicely warmed, and the potting of the plants very firmly done. When the plants are making roots freely, afford them plenty water.

THE ORCHID HOUSES.

B. W. H. WARR, Orchid Grower, Burford, Dorset.

East Indian-house.—Plants of *Oncidium apianthum* and *O.* a major are now showing their flower-spikes, and should be given a warm moist-atmosphere. Cockroaches and woodlice must be sought after and destroyed, or the spikes may be devoured before the grower is aware that they are showing. To avoid this, the plant may be suspended from the roof, and immediately the flower-spikes are seen, they should be protected by a ring of wadding. Place some pieces of potato upon the compost, and examine them night and morning, for the woodlice; and the cockroaches may be destroyed with beetle-poison. For some time past, this species of *Oncidium* has been given but little water, and it must now be afforded sufficient to keep the roots moist. *O. lanceanum* is a very handsome species of difficult cultivation. We have been informed by various collectors that in its native habitat (Surinam) it is generally found growing on trees in shady places, and in hot, moist situations, in company with the rare *O. leucostichum*. Both species are now commencing to grow, and may be top-dressed or repotted. Watering must always be practised with great care, and if possible, the water should be prevented from touching the rhizomes of the plant or the base of the leaves, which are liable to become spotted from this cause. In the early morning, the foliage may sometimes be seen covered with condensed moisture, which should be removed with a sponge. *Staurois lissoclioides*, better known as *Vanda Batemanii*, is now producing strong flower-spikes, and should be afforded more water at the root, and exposed to all the light possible. The same remarks apply to the curious *Araucanthe (Vanda) Othearthi*, which has been showing its bloom-buds for several weeks past. *Vanda aculeosus*, which has frequently proved very difficult to grow satisfactorily, should be placed during its period of growth in the lightest position in the house, suspending it in a teak-basket near to the roof glass. The plant requires abundance of root-moisture during growth. The flower spikes will soon appear, and when the flowers are ready to expand, the plant may be removed to the drier atmosphere of the Mexican-house. Several varieties of *Phaius*, as *P. assenicus*, *P. grandifolius*, *P. Blunoi*, *P. Wallichii*, *P. bicolor*, *P. Sonderianus*, and the beautiful hybrid *P. Cooksoni* are now making their flower-spikes, and require plenty of root-moisture, and an occasional dose of weak liquid cow-manure.

In the **Intermediate-house**, *Coleogyne cristata* and its varieties should be afforded the same kind of treatment as that recommended for *Phaius* until the flowers commence to open. *Coclia bella* is a very

pretty species, and its dwarf funnel-shaped flowers have a pleasing fragrance. This species and *C. macrostachya* may be repotted as they pass out of pots. They should be grown in well-drained pots in a mixture of peat and sphagnum-moss, and placed in the coolest part of the house. They are plants requiring very careful watering at all times. The sweet-scented *C. Baucina* requires a temperature equal to that of the East Indian-house; otherwise, it should be given the same treatment as the other species.

Bryonia are botanically interesting, but are not so popular as species which possess showier flowers, though several of them are well worth growing, especially where out flowers of an enduring nature are required. Such varieties as *B. verrucosa*, *B. Girouidiana*, *B. caudata*, *B. brachiata*, *B. Lawrenceana*, and its major variety *longissima*, are now starting to grow, but they should not be repotted until new roots are seen to be pushing from the base of the young growths. They may be grown in pots filled to three-fourths of their depth with drainage. Fibrous peat and a little moss are good rooting materials for them. Keep the plants well elevated above the rim of the pots, as the bulbs are liable to become spotted through close contact with the compost. Place them in the driest part of the intermediate-house, and water sparingly until the flower spikes show.

THE HARDY FRUIT GARDEN.

By H. W. WARD, Rayleigh, Essex.

The Protection of Blossoms of Apricots and Peaches.—The time is at hand when Apricot and Peach blossoms will require to be protected from frosts, and protective material should be provided ready for use a week or two hence. The best temporary protecting material that I am acquainted with is canvas, such as No. 12 All No. 5 Hexagon, two widths consisting of 54 inches and 72 inches together. This material may be wound top and bottom with broad tape, stretching lengths of the same crosswise at intervals of about 10 feet the entire length of the cloths. On to these fasten about nine rings, through which and the pulleys to pass the sash-lines for the purpose of raising and lowering the cloths when necessary. I have used this kind of material for Apricots, Peaches, and Green Gage Plums for twenty-five years with satisfactory results, the fruits having set so thickly on the trees as to render severe thinning necessary. The blinds, as already stated, are raised and lowered by means of sash-lines and pulleys, fixed in the following manner:—A series of light poles, varying from 3 to 4 inches in diameter at the bottom to 2 inches at the top, the latter having a slice 1 inch thick, and 3 inches deep, cut off one side to screw strips of board of the same dimensions to, on which to secure the canvas and screw-pulleys and hooks for raising and looping up the blinds to by means of short lengths of stout string provided for the purpose. These poles are let into the ground a few inches at about 6 feet apart, the tops (round side) being secured in suitable holdfasts (V), driven into the wall immediately below the coping, and against the face of which the several poles rest; and screwed thereon are shouldered straps of iron 1 inch wide, and $\frac{1}{2}$ of an inch thick, rounded on one side, with a bolt and nut on top, and on to these boards, about 14 inches wide, and provided with $\frac{1}{2}$ inch circular holes, are fastened by means of oblong washers and nuts, the former being placed between the latter and the wood. Hooks are driven into each pole 9 feet down from the top, to secure the blinds to when let down. This is very necessary, as wind rising at night would otherwise do much damage to trees and blinds. The poles, boards, and cloths referred to above will last for several years if stored away in the dry when not in use. They are easily put up and easily taken down. Wide coping-boards, alone used in the manner indicated, make a fairly good protection to extended fruit-blossoms, as it is the downward direction of frost that does the mischief. Fish-nets, doubled or trebled in thickness, if hung up in front of the trees, may be had recourse to where nothing better is available.

Arrays of Work, in the way of planting and pruning of trees, Currant and Gooseberry-bushes and Raspberry-canes, should be finished, where the frost has relaxed its hold in the ground. Trees and bushes which were planted before the frost set in, should have the soil made firm about the stems where necessary, staking standard trees and others requiring support, to maintain them in an erect position. If not already done, paint the stems up 2 feet from the ground with a mixture consisting of clay, soot, and

cow manure, mixed to the consistency of thick paint, as a means of preventing rabbits and hares gnawing the bark. The canes of autumn-bearing Raspberries should be cut down to within about 2 inches of the ground.

THE FLOWER GARDEN.

By CHARLES HERRIN, Gardener, Droppnora, Maidenhead.

To Cut Down Shrubs.—At the time of writing, snow and frost are checking much of the out-door work of the season; still, advantage may be taken of days when neither sun nor rain fall to reduce the size of over-grown shrubs, cutting the branches hard back. Laurels are much benefited by this hard pruning, and may be cut down nearly to the ground. This has the effect of forcing into growth a mass of shoots at the bottom, as the stems break freely. Equally so, *Rhododendron ponticum*, and others on their own roots, may be similarly treated, these also pushing out an abundance of shoots from the stems and branches. It frequently happens that the choice varieties which are grafted on *R. ponticum* get over-grown with shoots of the latter. It is usually an easy matter to distinguish the *ponticum* growths, and remove them entirely by a vigorous downward pull, which is preferable to sawing or cutting with a knife or bill-hook, although large branches must be removed with the saw. The *Rhododendron*, where it thrives, is not harmed by severe pruning, and the after-growth being quick, a specimen bush that has been severely cut, although not sightly-looking at first, soon becomes well furnished with shoots. Most kinds of shrubs may be thus cut back, including Hollies, both green and variegated-leaved, and in this respect they may be treated like the common Laurel. The *Thuia* and *Cupressus*, *Yew*, green and golden; *Raphirolepis ovatus*, *Phillyrea*, hardy *Heaths*, and *Tyrus japonica*, bear pruning with impunity. The first two make capital garden hedges, and may be clipped once a year, just like whitethorn. After and during heavy falls of snow, the Conifers and other trees and shrubs upon which it accumulates should be gently eased of their burden. The branches of ornamental Conifers, &c., which sweep the ground, and all newly-planted trees should be surrounded with rabbit-proof wire during hard weather, or much harm may be done where hares and rabbits are found. This wire-netting ought to be at the least 2 feet high, and made secure with neat stakes or iron-rods. If a fence of this kind be to remain round a tree for several years, it should have a strip 6 inches wide at the bottom bent at right angles, and buried 6 inches deep; the reason for which is that the rabbit begins to burrow under a fence close to it, and soon coming on the up-turned strip, through which it cannot make its way, it then desists from burrowing. When the fence is made in this wise, the wire must be wider than 2 feet, or two strips used instead of one.

Olives and Iresines, &c.—These plants may now be placed in more heat, and the propagation by means of cuttings commenced as soon as the tops get of sufficient length. *Heliotrope*, *Ageratum*, and *Tropæolum* may be similarly treated, with the exception of a rather lower temperature suiting for these; moreover, they may be increased more readily later on. Stock plants of *Verbena* should be potted or boxed, and placed in a warm house, the tops being taken for cuttings after growth has progressed a little.

PHYSIOLOGICAL DIAGRAMS.—In these days of horticultural schools, a good set of diagrams, illustrative of the principal facts in vegetable physiology, as a desideratum. This has been supplied by Professor ERBERA and Dr. E. LAURENT, of Brussels (WILLIAMS & NORWICH, London). The pictures appeal to students of all nations, but for the benefit of the students using different languages, the explanations of the figures are given in German, French, and English. The plates are devoted to the physiology of nutrition only, as the phenomena of reproduction are already well represented in similar collections. The plates in question are 70 x 80 centim.—none too large for a classroom. The first plate is devoted to a graphic representation of the proportions amounts of different kinds of food taken up by the roots. Then follow plates devoted to respiration, assimilation, transpiration, parasitism, fermentation, carnivorous plants, root-tuberules of Leguminosæ, growth of roots, stems, influence of gravitation, light, climbing plants, movements of plants, and variation as represented in the forms of Cabbage. The plates are well selected, and tell their story so effectively, that we recommend them for all garden-schools and similar institutes.

EDITORIAL NOTICES.

ADVERTISEMENTS should be sent to the PUBLISHER.

Illustrations.—The Editor will thankfully receive and select photographs or drawings suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, &c.; but he cannot be responsible for loss or injury.

Local News.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

Newspapers.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, FEB. 9 { Royal Horticultural Society's Com-
{ mittee: Annual General Meet.
WEDNESDAY, FEB. 10—Renfrewshire Gardeners' Meet.
SATURDAY, FEB. 13—Royal Botanic Society Meet.

SALES.

MONDAY, FEB. 8 { Tuberoses, Spiræas, Peonies, Gladioli, &c., at Prothero & Morris' Rooms.
{ Border Plants, Bulbs, Lilies, &c., at Stevens' Rooms.
TUESDAY, FEB. 9 { Carnations and Picotees, Iris, Anemones, &c., at Prothero & Morris' Rooms.
{ Japanese Lilies, Andreas, Standard and Dwarf Roses, Begonias, &c., at Prothero & Morris' Rooms.
WEDNESDAY, FEB. 10 { Roses, Fruit Trees, Shiraz, Border Plants, Bulbs, Roots, &c., at Stevens' Rooms.
{ Hardy Perennials, Lilies, Spiræas, &c., at Prothero & Morris' Rooms.
THURSDAY, FEB. 11 { 200 cases of Lilium from Japan, 27 cases of Arcauria excelsa, 500 lots of Border Plants, &c., at Stevens' Rooms.
{ Lilies, Begonias, Hardy Bulbs &c.; Imported and Established Orchids from Messrs. F. Sander & Co., at Prothero & Morris' Rooms.
FRIDAY, FEB. 12 { Scientific, Photographic, and Miscellaneous Property, at Stevens' Rooms.

AVERAGE TEMPERATURE FOR THE CHISHAM WEEK, deduced from Observations of Forty-three years, at Chiswick. —59° F.

ACTUAL TEMPERATURES:—

LONDON—February 3: Max., 44°; Min., 36°.

PROVINCES—February 3 (6 P.M.): Max., 50°, Scilly; Min., 21°, Aberdeen.

Economic Botany and its Applications.

Our neighbours on the other side of the Channel have now a fine opportunity before them of promoting the general welfare and civilisation of the peoples in their recently-acquired protectorate over Tunis. Two circumstances seem specially favourable to them—the experience gained in the neighbouring territory of Algeria, and the fact that French domination in Tunis has been secured peacefully, and without the hatred and distrust of the victors felt by those who have been conquered. Otherwise the conditions appear much the same. The physical geography and climate of Tunis very closely resemble, if they are not identical with, those of Algeria. Arab and Turkish rule have, as in other countries, blighted what was once one of the most productive districts in the old world; and the task before the French is to fight against the inclemencies of the climate, and remedy the devastation caused by former and present possessors of the soil. The task is undoubtedly a very onerous one; but we have no doubt that, given time and peace, a large measure of success will await the well-planned efforts of the French. The first thing to do is obviously to obtain a complete survey of the country, so as to become familiar with it in all its details, not omitting the laws, manners, and customs of the natives. In this country, authentic information of this kind is too often locked up in blue-books, or other official publications, which do not reach the general public;

but in the case of Tunis, the French have a comprehensive account of the natural features and products of the country in successive numbers of the *Revue Générale des Sciences*.

We call attention to this publication, as some portions of this report are likely to be of interest to our readers, and those who are not immediately concerned will still find the reports interesting reading. The first article of special interest to cultivators is one by M. GASTON LOTU on the forests of Tunis. These, for climatic and other reasons, were never very extensive, but there is clear evidence to show that they were greatly more so than at present. An immense tract of Olives and Almonds, extending from Algiers to Morocco, was destroyed for military reasons. The recklessness of the Arabs, forest fires, and especially the goats, are responsible for much subsequent loss, and these evils the French, who are good foresters, are setting themselves to remedy. The Cork-Oak, the Aleppo Pine (*P. halepensis*), Evergreen Oaks, the "Thuya"—by which the writer, no doubt, means the *Tetraclinis articulata* (syn. *Callitris quadrivalvis*), which furnishes beautifully marked and durable timber—and Olives, are among the most useful trees, and their management has been undertaken by the State, the first duty being the construction of roads, and the formation of trenches to check the progress of the forest fires. The preservation of existing forests is an easier matter than the formation of new ones. Seed has to be sown again and again to compensate for the destruction of the young seedlings by drought, fire, goats, and moving sand, so that re-forestation by means of seedlings has had to be abandoned. M. LOTU concludes his report by saying that the northern forests already supply an important source of revenue, the soil of the oases becomes less mobile, and a beginning has been made in the solution of the problems connected with re-forestation.

The same report contains a very interesting notice on acclimatisation in Tunis, by Mr. MAX. CORNU, the Director of the garden of the Museum in Paris. We need not stop here to discuss the meaning properly belonging to the word acclimatisation, but take it in the sense in which it is generally used by practical men. M. CORNU has had a comparatively easy task. The opposite shores of the Riviera, the labours of NAUDIN and of the late Baron VON MUELLER, afford both examples and precepts applicable to the present case. M. CORNU divides the country for his purposes into the mountain zone of the Apple and the Pear, with a climate like that of Central France, the zone of the Olive recalling the climate of Provence, the zone of the Orange, where the *Eucalypti* may be planted, as at Nice and Cannes; the zone of the Date-Palm comprising the oases. These zones, of course, overlap, and are modified by local conditions—drought, heat, wind, and moving sand being the chief evils that have to be met. In order to develop and extend the resources of these regions, an experimental garden has been established in the vicinity of Tunis, to cultivate plants likely to be serviceable, and to supply the natives and colonists with plants, cuttings, grafts, &c., of plants of economic importance.

One great difficulty in the way of the garden arises from the operation of the *Phylloxera* laws, which here, as elsewhere, by their misplaced rigour have caused an entirely unnecessary amount of loss. "*Aucune plante ne doit entrer en Tunisie.*" The universal failure of such laws to prevent the introduction of the

Vine-louse is surely sufficiently obvious to ensure the speedy modification of these restrictions. Till this is done, seeds constitute the only means by which useful plants can be introduced. Among the Oranges and other fruit-trees, may be mentioned, as thriving under proper care in Tunisia, Bananas, Custard-Apples (*Cherimoya*), Casimiroa, Avocado Pears, Litches, Tree Tomatoes, and Persimmons. As shade-trees, *Ficus macrophylla* is recommended, and *Phytolacca dioica*, which attains an enormous size, and which astonishes visitors to the Riviera who are accustomed to see it at home as an herbaceous perennial. Protection against wind is secured by plantations of *Acacia cyclops*, *eburnea*, *Farnesiana*, &c., behind which *Casuarinas* may be utilised. Among industrial products, the Sugar-cane is failing in the competition with Beetroot, and this in French territory furnishes a curious subject for reflexion! The circumstances are not favourable for the cultivation of Cotton, but fibre-plants like Sisal-hemp and various Agaves would thrive in Tunisia; and in the oases, no doubt much might be done in the cultivation of the better varieties of the Date-Palm.

We need not make further comments upon this interesting report beyond saying, that it furnishes an excellent illustration of the important services that botany and horticulture, which the public are apt to look on as mere matters of recreation or amenity, can render in the development of the resources of a country. In our own country, colonial interests have been made the subject of special study at Kew, beginning with Sir WILLIAM HOOKER, growing vigorously with his successor Sir JOSEPH HOOKER, and continually showing expansion under the present directorate. In the future, as in the past, statesmen will need the co-operation of the men of knowledge, and the men of practice, in order to make the most of the territories over which they hold sway.

"SOME interesting particulars concerning the management of Epping Forest appear in the annual report of the Epping Forest Committee of the Corporation. The moderate thinning of the over-crowded woodlands has been continued, the work consisting of the removal of inferior stems which injure those of more picturesque growth, or which interfere with the healthy development of the undergrowth and saplings. In future, the preservation of the natural beauties and features of the forest will be maintained by the non-removal of trees overthrown by the wind and those of a larger growth which die. The shooting of wild birds has been stopped, and the number of wild ducks breeding at Waustead has greatly increased. In the early part of last year it was resolved to take a census of the deer, and the operation proved one of considerable difficulty, but out of four censuses three were practically identical, and these indicated that the fallow deer number about 130, and the roe deer about thirteen, a large increase." *Westminster Gazette*, February 1, 1897.

The lines in italics are our own, and point to a mischievous practice not favoured by foresters who have charge of forests and plantations in civilised countries. To permit dead and decaying timber to remain any longer in a forest than is absolutely necessary is simply to afford breeding and hiding-places for insects injurious to trees, and centres from which many species of fungi inimical to the life



FIG. 26.—ROSE-ARCADE IN PLEASURE-GROUND OF LUTON HOO. (SEE P. 95.)

and well-being of trees may spread to those which are sound. Of these injurious vegetable parasites we may merely mention *Neetria cucurbitula*, whose host-plant is usually the Spruce, and more rarely *Sots Pine*, Silver Fir, &c. *N. ditissima*, the cause of canker in the Apple, attacks Hornbeam, Hazel, and Beech; *N. cinnabarina*, whose mycelium penetrates into all the elements of the wood, decomposing the starch, in consequence of which the wood turns black. The Oak is subject to many forms of canker, of which it will suffice to mention *Aglotospora Tuleada*, which attacks the smooth cortex of Oaks under forty years of age, causing it to die in patches. "A year afterwards," remarks HARTIG, in his *Diseases of Trees*, "numerous round or oval cushion-like stromata appear in the dead cortex: Later on these break through the periderm in one, two, or three places, further developments follow, and trees so attacked succumb in large numbers, rendering frequent felling and strong thinning necessary" as a means of preventing infection. We have said enough to show that the authorities responsible for the preservation of Epping Forest, cannot avoid the work of felling and clearing out the dead and dying trees, even if by so doing they offend the æsthetic susceptibilities of some of those who all unconsciously would make a wilderness and call it peace.

LINNEAN SOCIETY.—On the occasion of the meeting of the society, January 21, Mr. C. B. CLARKE, Vice-President, in the Chair, the Secretary read a letter from Mr. J. Y. JOHNSON, of Funchal, Madeira, commenting upon Dr. D. MORRIS'S exhibition (November 5) of raphides composed of oxalate of lime in the bulbs of *Hyacinth*, the handling of which had produced a fern of *cecum*. Mr. JOHNSON mentioned a parallel case in *Richardia æthiops*, a beautiful Aroid known to gardeners as the Lily of the Nile. The laundress at Funchal had tried to utilize the starch obtainable from the corns, but complained of the irritation in the hands produced by it, which, on examination, was found to result from the presence of numerous needle-shaped raphides, as in the case of the *Hyacinth*-bulbs referred to.

ROYAL HORTICULTURAL SOCIETY.—The next meeting of the Royal Horticultural Society will take place in the Drill Hall, James Street, Victoria Street, on Tuesday, Feb. 9. The various committees will assemble at noon as usual, and at three o'clock the annual general meeting of the society will be held at the Society's offices, 117, Victoria Street, Westminster, S.W.

"KEW BULLETIN."—The January number contains a list of the publications more or less directly emanating from Kew since its establishment on its present footing in 1841. The arrangement is chronological, an inconvenience not compensated for by the presence of an index of names and subjects which we hope may be supplied on another occasion. The selection, if anything, errs on the side of over-elasticity; at the same time we note a few omissions. In any case it is a wonderful record, of which the Kew staff may well be proud.

THE ROYAL GARDENERS' ORPHAN FUND.—At a meeting of the Executive Committee, presided over by Mr. W. MARSHALL, the following special donations to the Fund were announced: Leeds Paxton Society, £3 5s.; Tonbridge Gardeners' Society, box £2 6s.; Mr. G. FRY, Hither Green, Lewisham, box £1 2s. 6d.; A. CHANCELLOR, Esq., Richmond, £1; Mr. THOS. WILKINS, Henridge Gardens, Blandford, 16s.; Mr. G. SMITH, Kenley, 5s.; Mr. C. LAWTON, Brough, 5s.; and "A Youth from Ayr," 2s. 6d. The draft report and financial statement were considered and agreed to, and passed for presentation at the Annual General Meeting at

Arderton's Hotel, on the 19th inst. It was announced that Mr. OWEN THOMAS, Frogmore, would take the chair at the usual dinner on the evening of the annual meeting, at 6 p.m.

THE RETIREMENT OF MR. DAVID THOMSON FROM DRUMLANRIG.—We understand that Mr. DAVID THOMSON will in May vacate the post of head gardener to His Grace the Duke of Buccleuch at Drumlanrig, a post which he has held with distinction for twenty-nine years, and will in future reside in Edinburgh. Mr. THOMSON'S successful career as a horticulturist and a manager of these princely gardens, also of those at Archerfield, and during his earlier years in England, is pretty widely known in the gardening world. He has accomplished much in every branch of horticulture, and in every detail of garden management. Mr. THOMSON'S urbanity, kindness, and high character, his helpfulness to all who sought his aid and advice on matters of importance as well as on gardening, were equally well known and appreciated. He has written much, and with great lucidity, on most branches of horticulture, and his gardening works are greatly valued by his numerous readers. The Duke of Buccleuch, who, together with the family, are loath to part with him, have made kindly overtures to him to remain at his post; but though his bodily and mental activity are not impaired, his advancing years have to be considered. Mr. DAVID INGLIS, head gardener to Lord GREY, Howick Hall, Lesbury, Northumberland, has been selected to succeed Mr. THOMSON. Mr. INGLIS has been about 20 years at Howick, and was for some time previously at Powerscourt. He is a very able, all-round gardener (now in the prime of life), and well merits the choice which has been made.

THE SURVEYORS' INSTITUTION.—The next ordinary general meeting will be held on Monday, February 8, when a paper will be read by Mr. J. W. WILLIS BUNO (Associate), entitled "Allotments and Small Holdings." The chair to be taken at 8 o'clock.

WINCHESTER GARDENERS' MUTUAL IMPROVEMENT ASSOCIATION.—On Tuesday, the 26th ult., Mr. P. H. FORBES, B.Sc., M.R.A.S. (of the University Extension College, Reading), gave a lecture on "Insects injurious to Plant Life, and how to Deal with them," the lecture being made unusually interesting by the different subjects exhibited by means of lantern slides. The principal subjects were the winter-moth, ear-worms, and weevils.

ANNUAIRE GÉNÉRALE HORTICOLE.—The publishers of the *Jardin*, 107, Boulevard Saint Germain, Paris, have issued a directory containing the list of members and the statutes of the Central Syndicate of Nurserymen of France. In addition, there are lists of all the horticultural societies of the country, according to the departments in which they are situated, and of the nurserymen, seedsmen, and other tradesmen connected with horticulture, arranged according to departments, and also alphabetically. A few English firms are mentioned, but we think few would recognise the great Grange cultivator nor his address under this entry, "KAT,

Peter E.," in which the first word is in the position allotted to the locality, and the second in that assigned to the name!

ROCK GARDENS.—Recent numbers of MÖLLER'S *Deutsche Gärtner Zeitung* contain numerous illustrations showing the very effective manner in which M. COUSYAN arranged his collections of alpine plants at the recent Geneva exhibition. Rocks, waterfalls, picturesque clefts, lent *vraisemblance* to the exhibition, whilst the collection of species was remarkable for its extent and condition.

DUNES.—The American Holly, *Ilex opaca*, grows in the vicinity of the Dunes of New Jersey, and is recommended to be propagated by seed on these sands, when they have become fixed. *The Forester*,

"LA SEMAINE HORTICOLE."—It is our pleasing duty, metaphorically, to lift our hat, and extend our hand in friendly salute to the new horticultural venture. M. LUCIEN LINDEN, whose energy seems inexhaustible, has now launched his weekly garden

newspaper in the French language. It is founded on the plan of the English horticultural journals, and, like them, embraces all departments of horticulture, the contents of the first number, always the most difficult, being very varied. The *Journal des Orchidées*, with all its smartness, and the *Illustration Horticole*, will be "englobed" within the columns of the *Semaine*. We wish our colleague all the success the enterprise deserves.

BOTANIC GARDEN, TRINITY COLLEGE, DUBLIN.—Among the interesting plants now in bloom are *Trochetia Blackburniana*, a *Stereulinaceus* plant from Mauritius; and the pretty Composite, *Barbadensis rosea*, allied to the *Mutisias*.

HORTICULTURAL CLUB.—The twenty-second anniversary dinner will be held at the Hotel Windsor on Tuesday, February 9, when the Chairman of the Club, Sir J. D. T. LLEWELYN, Bart., M.P., will preside.

THE WOLVERHAMPTON FLORAL FETE.—From a general statement of accounts just issued, we learn that the income for the year 1896 was £2302 5s. 7d. Subscriptions realising £256 8s. 6d.; sale of tickets and admissions paid, £1567 11s.; and from other sources the sum of £373 3s. was received. The profit on the year is £433 5s. 7d. Among the items of expenditure is bands, £190 19s.; and fireworks, £448 13s. 8d. It is the two latter items especially which entice the throngs to visit the show, though a very large and really magnificent exhibition is provided. The committee have paid out of their profits, £632 3s. 9d. to the committee of the Queen's Park and Baths, for shelters, greenhouses, &c., from 1889 to 1894, and they paid £1062 18s. for the erection of the fine conservatory in the West Park. They have the sum of £1818 15s. 3d. invested, and have purchased at various times permanent plants to the value of £177 2s.

THE EALING HORTICULTURAL SOCIETY.—The annual meeting of this Society was held on the 21st ult., and the report of the committee went to show that, despite the wet weather experienced on the day of the summer show, and the counter attractions on the day of the *Chrysanthemum* exhibition, yet a substantial balance, according to the Treasurer's statement, is carried forward to the present year. It was resolved that the summer show should take place on June 30, and the *Chrysanthemum* exhibition on November 3. Messrs. A. G. DIXON and GEORGE CANNON were appointed joint Hon. Secretaries.

"POPULAR BULB CULTURE."—By W. D. DUBRY (L. URCOTT GILL, 179, Strand). At the low price of a shilling this "handy guide to the successful culture of bulbous plants both in the open and under glass," will prove both attractive and useful to every one who loves his garden and greenhouse. It is, naturally, intended for the masses, rather than for specialists, who would prefer a more ambitious work. *Popular Bulb Culture* is arranged alphabetically, and its distinguishing title is used in its widest sense. An index aids the reader in his work, which is rendered still more agreeable by the inclusion in the book of many illustrations.

WOLVERHAMPTON HORTICULTURAL CLUB.—A monthly meeting was held on February 2, at the Midland Café, when Mr. G. BARRORS, Berwick House Gardens, Shrewsbury, read a paper upon "Orchids." The essayist touched briefly upon the structure and habits of some of the genera, and dwelt more fully upon details of culture.

GENERAL HORTICULTURAL EXHIBITION AT HAMBURG.—Notwithstanding the delay in issuing the plan and programme of the scientific section of this exhibition, a considerable number of botanical and zoological objects have been received from Germany and foreign countries; and notices from intending exhibitors have already reached a surprising number.

PUBLICATIONS RECEIVED.—The following publications have reached us from the United States Department of Agriculture, Division of Entomology:

Bulletin No. 6, *Proceedings of the Eighth Annual Meeting of the Association of Economic Entomologists*, containing papers among which are the following:—The Evolution of Economic Entomology, C. H. FERNALD; Some Temperature Effects on Household Insects, L. O. HOWARD; A New Insecticide (arsenate of barium), A. H. KIRKLAND; Scale Insects and their Enemies in California, J. B. SMITH, &c.—*Bibliography of the more important Contributions to American Economic Entomology*, prepared by SAMUEL HENSHAW. Part V. L-Z. The concluding and index volume of a useful publication.—*A Bacterial Disease of the Tomato, Egg-plant, and Irish Potato*, by ERWIN F. SMITH. This Bulletin deals with *Bacillus solanacearum*, n. sp., and of different conditions under which the pest is favoured or can be combated against. It is illustrated with coloured and other plates.—We have also before us Nos. 21 and 22 of *Favourite Flowers of Garden and Greenhouse*, by EDWARD STEF, F.L.S. This work, previous numbers of which we have had occasion to notice, is progressing satisfactorily, the latest page of it dealing with *Immortelles* (*Helichrysum*). The accurate and attractive plates will commend the publication to the many who consider no book complete without such additions.

LUTON HOO PARK.

WHEN recently visiting this grand old place, I was much struck with the great improvements that have been carried out there during the last year or two. Madame de Falbe, the owner, has good reason to be proud of this estate. The present house was erected in 1843, the old mansion having been twice destroyed by fire, and risen, Phoenix-like, from its ashes. It formerly belonged to Lord Bute, and was, after changing hands once or twice, purchased by the late John Shaw Leigh, Esq., who restored and decorated the building; and after his death it passed into the hands of his son, Mr. Gerard Leigh, the first husband of the present proprietress. The park contains about 1500 acres, and the river Lea, which runs through the lower portion of the estate, is widened out so as to form an extensive lake, which forms an attractive feature, especially when viewed from the house.

The pleasure-grounds, which are about 100 acres in extent, are well laid-out, and contain some fine specimens of trees and shrubs. Portugal Laurels seem to revel here, some of the clumps being as much as 15 to 18 feet high. There are some very pretty little nooks, which have been turned into small gardens of the Italian style; many fine and valuable statues which have been introduced here, and great care has been exercised in the planting of Roses and climbing plants, which are skillfully trained to form bowers and various designs (see fig. 26).

The flower-garden contained last summer some extensive beds of fine-flowering tuberoses *Begonias*, as well as other popular bedding plants. I was much pleased with a large bed of Crozy's dwarf Cannas, which were full of bloom. Mr. Mayocek, the gardener, has evidently found out the way to treat these handsome plants, for a better lot I have never seen in the open. There are also here grand borders of herbaceous plants, which have been well planted, great care having been bestowed on the selection of species and varieties.

Leaving the flower garden, I was conducted to the kitchen-garden, which is 6 acres in extent, and well walled in; it contains a fine collection of fruit-trees, these both on the walls and in the quarters being in excellent condition. There was a capital crop of fruit last year, and many new and meritorious kinds have been recently planted. Strawberries are grown to a great extent, and 3000 potsful are forced yearly. *Chrysanthemums* are also extensively grown. *Carnations*, too, are a great feature, 3000 plants being grown in pots, and a very large number planted out in the borders; *C. Souvenir du Malmaison* are well done, and the whole stock at the time of my visit was free from disease. There is a spacious range of plant-houses, vinerias, and Peach-houses also; in the stove some fine *Crotons*, *Alocasias*, *Dracenas*, &c., were on

view; the collection of Palms is large, some fine specimens of *Kentias* being specially noticeable. *Azaleas*, too, are grown largely; in fact, most of the things taken in hand by Mr. Mayocek are done well, and it must be very gratifying to him to receive the encouragement he does from his employer, through whose generosity he visited the Riviera in January, 1895, when he had an opportunity of comparing notes and of visiting the beautiful gardens in that favoured district. Madame de Falbe has a large villa at Cannes, and takes great interest in acclimatizing many of her favourite plants in that climate. *Henry Williams*.

MASDEVALLIA CORIACEA, Ldl.

THIS is a very old *Masdevallia*, having been discovered by Theodor Hartweg, one of the Royal Horticultural Society's collectors in 1842, on the hills

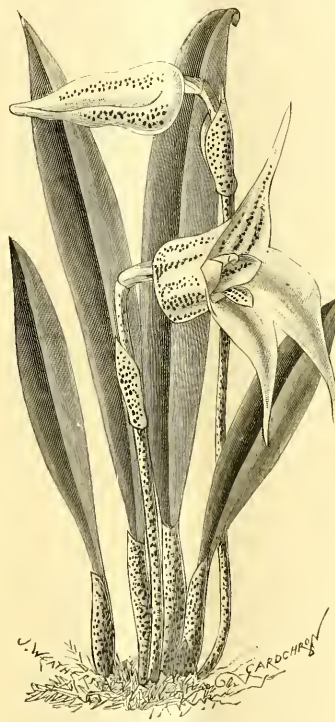


FIG. 27.—*MASDEVALLIA CORIACEA*.
(Colouring of flowers white, creamy-yellow and purple.)

of Montserrat, near Bogota. It was subsequently found by other collectors, including John Linden, Schlim, Karsten, and Weir, in the same neighbourhood, at elevations varying from 7000 to 9000 feet. It does not, however, appear to have been introduced to cultivation until 1871, when it was distributed by Messrs. H. Low & Co., of Clapton, as *M. Bruchmulleri*, in the belief that it was a new species discovered by their collector Bruchmuller. In construction it approaches *M. civilis*, *M. leontoglossa*, and *M. velutina*; but it is nevertheless quite distinct from all of these in many respects.

As will be seen from the accompanying sketch, made from one of Messrs. Sander & Co.'s plants shown at the Drill Hall on July 10, 1896, the flowers are by no means minute (fig. 27). The perianth (calyx) tube is very fleshy, and of a creamy greenish-yellow inside,

the outside being washed with purple-brown at the base, and decorated with a few rows of purple dots. The conspicuous white petals have a crimson line in the centre, almost from base to apex; while the lip is pale green, minutely tubercled in front, and has three brownish-green longitudinal stripes on the surface. The leaves are very leathery, 6 inches or more in length, with purplish speckled petioles, and the slender scapes are pale green, dotted with purple, as are also the rather large bracts.

It may be interesting to quote the following remarks by Coumel Lehmann, from the Marquis of Lothian's important publication, the *Genus Masdevallia*. He says:—"M. coriacea grows on sandstone rocks, upon which thin layers of soil and decayed leaves have accumulated, and is found along the western border of the Savana de Bogota, at an elevation of 2500 to 2650 metres (about 8125 to 8612 feet). It is plentiful in the vicinity of Bojaca, Facatativa, Tres Esquinas, and Subachoque, and in all these localities, it is exposed to severe changes of climate—sun, rain, and strong winds. The annual average temperature of this region is between 13° and 15° Centigrade (about 55° to 59° Fahrenheit)." *John Weathers, R.H.S., London*.

NOTICES OF BOOKS.

CONFIDENCES OF AN AMATEUR GARDENER.
By A. M. Dewsmith. (London: Seeley & Co., Limited.)

THIS book is composed of a series of papers which have previously appeared in the *Poll Mall Gazette* under the heading, "Wares of Antiochus;" in their present form they are supplemented with plates of a Japanese-like style. The matter of the letterpress may be guessed from the title of the volume. The author discourses pleasantly of her garden, her experiences, difficulties, and amusements therein. Those who like, as many persons do, a chatty rather than a learned book, and written by one who has committed to paper those little adventures, pleasant and otherwise, which befall all amateur gardeners, will be pleased with these confidences.

FRUIT CULTURE FOR AMATEURS.*

IN writing this manual on fruit culture for the use of amateurs, the author does not follow in the track of most other writers on the subject of fruits and their cultivation for market purposes, whose treatises have issued from the press in some considerable numbers of recent years, and necessarily the space devoted to each kind is more limited. As is befitting so experienced a cultivator, his first chapter treats of the drainage of the land, affording the reader pretty full instructions with regard to the methods he should pursue in rendering the land fit to carry any kind of fruit-tree or bush. Then follows a chapter on planting, advocating, as he was bound to do, either surface or shallow planting on very heavy soils. Then follows a series of brief chapters on each kind of fruit grown in British gardens, not forgetting Nuts, Filberts, Strawberries, &c. We remark that his list of varieties under each heading is severely limited in number; and, we think, that in view of the fact that some varieties suffer from spring frosts more than others, the amateur will be well advised to be less nice in his choice of varieties, and to learn from his more experienced neighbours the names of the varieties which have been found to suit the locality, as well as to consult his own tastes and predilections, supposing he have any. Under Pears we are pleased to find varieties named which, owing to their fine flowers or their abundance, make admirable decorative trees in pleasure grounds and shrubberies; among these is that seldom seen, but delicious small-fruited variety, *Aston Town*. No mention is made of the stately, pyramidal autumn Bergamot. Mention is made of such varieties as look well on the exhibition table.

* By S. T. Wright, Superintendent of the Royal Horticultural Society's Garden, Chiswick; with an Appendix on Insects and other Pests injurious to Fruit trees, by W. D. Brerley. (London: L. Upcott Gill, 179, Strand, W.C.)

The Apple is made to furnish its quota of varieties ornamental when in bloom, among which we find Lord Grosvenor, Dumelow's Seedling, Duchess of Oldenburg, Warner's King, King of the Pippins, &c. This knowledge of varieties of Pears and Apples which are useful in this way, is peculiar and uncommon. For quick returns, Mr. Wright recommends the bush form, and on heavy land this form on the dwarfing stocks.

In the chapter on Plums, justice is done to the celebrated firm of Rivers & Sons, by including very early and very late varieties of this fruit, which have lengthened our Plum season by a period little short of three months.

Our author rightly insists on the continued cultivation of the Peach and Nectarine in parts of the country south of the Humber, choosing south, west, and east winds for the trees. We think that he might go even further north—at least, on warm soils and in valleys, and districts not much elevated above sea-level. In this chapter Messrs. Rivers appear as benefactors by their excellent, hardy, early, and late varieties of Peaches and Nectarines. Crispin Galande is stated to be the best all-round Peach known; and the woolly, fly-voracious, yellow-fleshed American varieties are very properly condemned. And so on *seriatim* through all our fruits, Grape-vines, nuts, &c. The various diagrams of training with which the book is enriched will be found of use by those for whom it is written, and who cannot have had any experience in this matter. In the chapter on Diseases, we find that the caterer in the Apple is said to be primarily due to twists and wounds, whereas these form only the points of access to the fungus. *Nectria ditissima* is the real caterer, which is extremely infectious.

The chapter on Insect Pests by Mr. Drury, contains much instructive matter, and the text is furnished liberally with woodcuts, showing the various insects in one or other stage of development. There are various small lapses that we noticed, but these are of no moment; and we can recommend the Manual to the notice of all amateurs contemplating the cultivation of fruits for home consumption.

HOME CORRESPONDENCE.

AN ANNIVERSARY APPEAL.—When we are in distress how we cry for help, but when we are full with all manner of good things, how seldom do we think of the needy, the fatherless, and the widow! Now in this year of our beloved Queen's reign, all of us seem desirous of having a joyful demonstration of thankfulness for a reign of peace and prosperity. This shows a wise and fraternal spirit. How many thousands are there who have as yet not begun to give a thought to their needy comrades and sisters, and who, when distressed of some kind comes, or the breadwinner is taken away, utters the cry, "I wish I had been more frugal, and given my mite to help the poor widow and orphans of that good, struggling man who has been taken, and who was not able to provide for the needs of those belonging to him." I have long thought, in fact, every Saturday morning I open the paper expecting to see some well-written article praying gardeners to lay this call to heart; and time time could not possibly present itself for a little sacrifice to be made by all the gardeners of the country. And if I could but persuade every gardener in the United Kingdom and Ireland to make this one effort to contribute seven-and-sixpence each this year, what a grand total it would make for the Gardeners' Orphan Fund. I am afraid Mr. Woods' idea is too extravagant to succeed; besides, one of the duties of our craft is charity towards our neighbour, and not thinking so much about our own comfort, but helping those who have no means of helping themselves. *Charles Feary.*

KETELEERIA FORTUNEI.—Your correspondent, "J. B.," in *Gardeners' Chronicle*, Jan. 30, p. 71, mentions two specimens of *Keteleeria Fortunei* growing in this country, one at Messrs. Veitch's nursery, and the other at Menably, Par, Cornwall. Many of your readers would, no doubt, like to know if these are

from Fortune's seeds, or young specimens from seed from Messrs. Rovelli's tree at Pallanza. In the report of the Conifer Conference, p. 454, the tree is stated to be abundant on the mountains to the north of Fochow—but immediately afterwards the report states that Fortune's specimen is the only one of its kind known in its native country. What authority is there for the former statement? Have cones, &c., from Fortune's tree been introduced since his time. His tree appears to be growing near the scene of the massacre of missionaries on Aug. 1, 1895, supposing, of course, that Koshau and Kuehng are only different ways of spelling the same place. Probably many missionaries and others have visited the place of late years. *Charles Palmer, 87, Burlington Street, Manchester.* [Charles found the tree abundant in the mountains to the north of Fochow, see *Masters in Journ. Linn. Soc.*, vol. xxii (1886), p. 197.—Ed.]

CYPRIPEDIUM INSIGNE SANDERÆ.—In last week's issue of your paper, in an editorial note to a letter written by "S. S.," on the subject of "Cypripedium insigne Sanderæ," you make the following statement:—"There are not two varieties of *Cypripedium insigne Sanderæ*, though possibly the allied but inferior *Cypripedium insigne Sanderianum* and other similar inferior varieties may have got confounded with it." This is incorrect. I have a plant of *C. insigne Sanderæ* which I purchased from Messrs. F. Sander & Co. some four years ago, and which was imported by them later than the original plant. There can be no doubt as to my plant being "Sanderæ," and it is equally certain that it is different in several respects from the original plant, or as it is now commonly called "Baron Schroder's variety." I showed flowers from my plant before the Orchid Committee last year and the year before, and on neither occasion did I hear of a doubt being raised as to their being true to name. In the opinion of several well-known Orchid experts the flower of my plant is superior to the "Baron Schroder's" var. In order to test the merits of the two varieties may be fairly discussed, I purchased last year, in flower, a plant of the Baron Schroder variety about the same size as my plant (some twelve growths). These plants are growing side by side in my Cypripedium-house, under exactly the same treatment, and when they are next in flower, I purpose bringing both plants before the Orchid committee. Had the flower which I brought before the Orchid committee last year painted by Mr. Macfarlane, and I have an exact copy of a painting by the same gentleman of a flower from Baron Schroder's plant. If you are sufficiently interested in the subject, I shall be pleased to forward these to your inspection. I shall be obliged if you will insert this letter in your next issue. It may perhaps assist in clearing up what appears to be a somewhat vexed question. *G. Shortland Ball, Ashford, Wiltshire.*

Your correspondent, "S. S.," seems to know more about my plants than I know. I have never shown my *C. Sanderæ* I sold to Mr. Low a plant in flower, and I believe Mr. Warburton has flowered a plant which I sold him. I have shown a form of *C. Sanderianum*. The plant of *C. Sanderæ* was sold by Messrs. Sander & Co., and bought at public auction by me at the Pickingale Sale for £273. I have compared the flower for two seasons with the flowers kindly sent me by Baron Schroder, and have found them alike, except that my flower was not quite so large. This will be owing to the plant having been broken up. Perhaps your correspondent is like a gentleman who saw one of the Baron's flowers in Manchester, and said it was a very poor form, and not at all like the *Sanderæ* he had seen at The Dell. Perhaps your correspondent's assertion might carry more weight (or less) if he gave his name. *E. W. Hardy.*

GROS MAROC GRAPE.—My experience of this variety is that in regard to flavour and quality, it is very often scarcely fit to eat. At the same time it has an excellent appearance, and is easy of cultivation. How a good judge of Grapes could place it before Muscat Hamburg and Madresfield Court, if these were properly finished, is beyond my comprehension. I was not at Edinburgh show, neither do I know any of the persons concerned, but Mr. Audrie, on p. 83, says Muscat Hamburg and Madresfield Court were shown "in splendid condition," and these being far more difficult to cultivate than is Gros Maroc, and moreover always good in flavour if well coloured, they certainly should have been placed first. Gros Maroc, Gros Colmar, and Alnwick Seedling are good market Grapes, I have no doubt, but

unless specially stipulated in the schedule, Grapes possessing mere size of bunch or of berry, or a heavy bloom, ought not to win against others of better quality and flavour, provided they are well finished. Such Grapes as Mrs. Pince, Madresfield Court, and Muscat Hamburg are sometimes exhibited in very poor condition as regards colour, and I would not place any Grape first that is not properly coloured, for it would encourage faulty cultivation. *W. H. Divers, Belvoir Castle Gardens, Grantham.*

THE PARTNAGE OF ROSES.—I am much obliged to your correspondent, Mr. A. Piper, for his appreciative and interesting observations on p. 83 of the *Gardeners' Chronicle*. Before perusing them, I had already noticed the incidental slip of the pen in substituting "Therise" for "Etienne" Level, in connection with the percentage of the Duke of Fife. That I was aware of its true percentage is evidenced by the fact that in previous articles contributed to other journals, I stated very clearly that Duke of Fife was a derivation from Etienne, not Therise Level, the latter of which I have never seen, though I believe it owed its origin to Jules Margottin. The great majority of Mr. Henry Bennet's Roses are vigorous in my garden; even Cleopatra and Princess of Wales have grown better than I anticipated. The Dean of Rochester writes to me as follows:—"Your sound praise in the *Gardeners' Chronicle* in honour of those who have 'obtained' new and beautiful Roses, will have a loud and unanimous chorus from all rosarians; and will, I hope, encourage them to make experiments in hybridisation." *David R. Wilkinson.*

OUT-OF-DOOR PEACHES.—My thanks are due to you and Messrs. Ward and Wadds for replies sent to the writing *crosses* mailing of Peach-walls. I am glad that they both can write in praise of a former, and consider quite as good growth is made, and I see good crops of fruit are secured, as when walling is practised. It was not the desire to know how to wire a wall that prompted me to write about the subject, but if possible to hear what other growers whose Peach-wall happened to be wired, had to say about the crops they obtained. I had wired my wall before the above well-known gardeners' remarks were in print. It has an east aspect, and is 60 yards in length. *J. Mayne, Bilton, Devon.*

UNFAIR TRADING.—In these days of keen competition, when so many in the horticultural trade have the hardest work to make both ends meet, anything like unfair dealing should be stamped out, if possible, and the voice of the whole trade raised against a custom so largely prevailing by the salesmen of Covent Garden Market—a custom that is absolutely unfair, if not dishonest—I mean the custom of supplying gentlemen's gardeners with cut flowers at wholesale prices to be used in their employers' houses, with most likely a profit charged on the bargain. It is just probable that the salesmen may be misled in the matter, and may be under the impression that they are sending to some florist shopkeeper or local tradesman; but surely they should do their best to ascertain the status of those they are supplying. Such a practice I know is largely carried on, and is most unjust to local growers and local shopkeepers, who when they buy in the market have to pay exactly the same price as My Lady's gardener. I know salesmen in Covent Garden market, who are in the habit of sending their wholesale priced lists regularly to private gardeners, and I, as one of the trade, protest against such unfairness, and I feel as if the respectable portion of the Covent Garden trade will set their faces dead against such a custom. How, I ask, are the growers and florist-shopkeepers to live, if private gardeners are supplied at wholesale prices? Surely, if private people are supplied through the wholesale salesmen (as I do not think they should be) they ought, at least, to be charged the retail price, and the salesmen's published wholesale lists supplied to the trade only. *Local Florist.*

RORIDULA GORGONIAS.—I have read the interesting note at p. 65 in the issue of the *Gardeners' Chronicle* for January 23, about the flowering of *Roridula gorgonias* at the Edinburgh Botanical Gardens. May I point out to Mr. Harrow that this is not the first instance of this plant flowering under cultivation, as it flowered in the Glasnevin gardens last December, and a lantern-slide of the flowering specimen was exhibited by me on January 1. It is curious to note that in the Edinburgh plant the petals are stated to have been white, whereas in the Glasnevin plant they were pink. *F. W. Moore.*

WOOD-ASHES AS MANURE.—Mr. T. Fletcher, in his note (p. 82) referring to Mr. H. T. Smith, says: "He overlooks the most important point, viz., that the dust-ash of coal should be identical in composition and properties with the ash from wood." This, however, is by no means the case, for the ashes of wood contain a large proportion of potash, while coal-ashes contain scarcely any. Again, coal-ashes contain a large proportion of sulphuric acid, while wood-ashes contain but little. There are also other differences in composition and in mechanical texture between wood-ashes and coal-ashes. With reference to this point, let us say, why are coal-ashes, which are derived from vegetable products, not identical with the ashes from wood? I have turned up much literature upon the question, but cannot find an answer, so I give my opinion for what it is worth. During the decomposition of wood, and other vegetable products which went to make up the coal, which may have occupied many thousands of years, before they were submerged, carbonized, and compressed, the rainfall and other atmospheric agencies separated the potash from the vegetable matter, which would thus become distributed and absorbed by the soil, and so lost to the coal products. Further, the nitrogen of vegetation is in the form of albuminoids; that is, nitrogen in combination with sulphur. In the course of the same decomposition previously referred to, the nitrogen would be given off as ammonia, while the sulphur would remain; this latter substance combining with the oxygen of the air and water, would produce the sulphuric acid of the coal. The difference in composition of the various samples of coal-ash referred to by Mr. Fletcher is doubtless due to the very different materials which made up the original coal-beds, and the degrees of oxidation to which they have been exposed. Thus we get soft, fluffy coal-ashes, and harsh cinder-like ashes; the latter are the residue of the more gaseous kinds of coal. Coal-ashes are useful in altering the mechanical nature of clayey, tenacious soils, but they contain little plant-food. They are, however, good absorbents of liquid-manure, and when so treated they form valuable fertilisers. *J. J. Willis, Harpenden.*

THE DEODAR.—I wrote about the Deodar as commonly grown and familiar to everybody. Dr. Schnappach, of German forestry reputation, writing in the *Zeitschrift für Forstland und Jagdwesen* for December, on his inspection of Scotch forests says:—"The *Cedrus Deodara* thrives in the open in East Scotland, but not in the West, because, it is only injured by uncommonly severe winters," that is, "in the open," but in a forest a tree is more sheltered. *J. Simpson, Wurtley.*

A PERFECT CLUSTER OF APPLES.—Permit me to thank you for giving the model cluster on p. 27. I have often wished—in making the most of, and securing as much freshness and originality as possible in arranging desserts—we could have more perfect clusters or sprays of Apples, Pears, Cherries, Plums, or other fruits to deal with. Of course, they can only be secured by forethought in thinning, and the sacrifice of a good many of the fruit buds for the succeeding years. But the few attempts made to make desserts more artistic through setting the fruit in clusters or branches were thoroughly successful. The Fairy, and other small high-coloured Apples, Crabs, occasional branches of Louise Bonne of Jersey, Marie Louise, and other Pears, branchlets of white and black Cherries, and the common Barberry, in fruit and foliage, will indicate how the light hand of art may enhance the charms of the dessert, without lessening its solid merits in any way. *D. T. F.*

SEED CATALOGUES.—An examination of the bulky catalogues issued by the leading seed-houses in the present day, offers evidence of the rapid strides that have been made in the distribution of seeds as a business compared with what it was fifty years ago. There were no illustrations given away in those days, and very seldom were prices attached to the articles named, and no doubt this sometimes enabled the tradesman to charge according to the means of his customer. How different are things in the present day, when every buyer, be he large and small, would hardly think of buying seeds without getting some idea of their price. The originality and enterprise now displayed in the "get-up" of some of these annual publications is worthy of more than passing remark; and an important change of recent date cannot fail to attract attention, namely, the extensive use of photography as a means of portraying vegetables, flowers, and fruits, thus enabling the

purchaser the better to make his choice. It is pleasing to observe that the heavy type and highly-coloured dials, common a few years ago, are no longer so prominent, and the matter incorporated with the lists is more abundant and useful. It seems remarkable that there should still be a demand for many varieties of vegetables that were among the earliest to find their way into this country; and I have selected a few which are given in the following lists:—Switzer, 1727; R. North, 1758; R. Clarke, 1793; J. Mason, 1800; and J. Carter, 1842—all seedsmen in London—whilst some of them are found in the older herbals. Broad Windsor Beans, Sugar-loaf and Batavia Cabbage; Brown Dutch and Silesian Lettuce; white Spanish and Strassburg Onion; Long Red and Round Radish. From Carter's list of sixty years since I find Grange's White, Hampton Court, and Knight's Protecting Broccoli; Atkin's Matchless Nonpareil, Early York, Emperor Imperial, and Turnip-rooted Cabbage; Altricham Carrot, Bath Cos, Paris Cos, Hammersmith, and Tennis-ball Lettuce; James Keeping, Deptford Onion; Matchless Marrow, and Victoria Marrow Peas, Olive-shaped Radish; White Dutch and Early Mousetail Turnip. *Seedsmen.*

SOCIETIES.

NATIONAL CHRYSANTHEMUM.

THE NEWER INCURRED CHRYSANTHEMUMS.

Some differences of opinion have arisen among cultivators of the Chrysanthemum in regard to the classification of some of the newer incurred varieties, and especially those which originated in America, as these, they allege, are not of the character of the true incurred form. It is true that American raisers have crossed the old types of the incurred varieties with incurred Japanese there can be no doubt, and it would appear that cultivation in this country, for the first year or two at the least, brings out the marks of this sort of crossing, though it is found that when grown for a second year the true incurred form is, in not a few cases, more fully displayed; and the decisions of the Floral Committee of the National Chrysanthemum Society in respect of some of these varieties appeared to have run counter to that of the judges in a few instances at the recent Jubilee Exhibition. The Floral Committee of the Society made a recommendation to the General Committee that a Special Committee of Growers should be formed to take into consideration these doubtful varieties and classify them. A committee of fifteen persons was appointed, mainly consisting of trade growers and exhibitors, Mr. T. BEVAN, Chairman of the Floral Committee, as President; and the report of this Committee was accepted by the General Committee of the N. C. S. on the 25th ult.

There will now be two types—the Incurred and Japanese Incurred; and all varieties which may be regarded as incurred, according to the standard characteristics set forth in the Society's list, and which will be regarded as incurred, and admissible in the competitive classes of incurred blooms. The following varieties are included in this class:—Duchess of Fife, Golden Nugget, Ideality, King of Orange, L'Amateur, Leonard Payne, Ma Perfection, Miss Phyllis Fowler, Mrs. F. Hepper, Mr. J. Keare, Miss Louise D. Black, Mrs. James Edric, Miss Dorothy Foster, Miss Violet Foster, Mrs. Aldridge, Mr. James Murray, Perle Dauphinoise, Percy Surman, Rena Dula, Rose Owen, Triomphe d'Éve, and The Egyptian. J. H. Buncheon, Olive Oeile, Lord Brooke, Robert Owen, and Sir Trevor Lawrence were classed as Incurred Japanese. In the case of Harold Wells, which was regarded as more correctly an incurred variety than Sir Trevor Lawrence, from which it is supposed to have sprung, the votes were equal, so its class remains undefined. Austin Cannell, to be found in some catalogues as an Incurred, and Mont St. Eynard (Calvat, 1895), were also among the varieties being as yet to be decided. It may be added, that in every instance only those voted who had knowledge of the variety.

The foregoing report, or as much of it as it may seem desirable, will be published with the Annual Report, and be considered binding upon competitors at the Society's shows, and upon affiliated societies, if it should appear any of the varieties named in the foregoing report have been classed in the Society's Jubilee catalogue under different sections, this report shall be taken as determining the section of any variety named therein.

THE ROYAL SCOTTISH ARBORICULTURAL SOCIETY.

The annual meeting of this Society was held in Edinburgh on the 27th ult., when the President, Mr. R. C. MURDO FRASER, M.P., presided.

PROPOSED EXCURSION TO IRELAND.

Mr. Mura reported that the Council proposed that the excursion of 1897 should be to Ireland about the middle of August. They expected to visit the estates of Lord Fitzwilliam and Lord Powerscourt in Wicklow, and a run might be made to Killybegs. These provisional arrangements were approved of.

ADDRESS ON FORESTRY EDUCATION.

The Chairman next introduced Dr. William Schlich. Dr. Schlich, he said, had been a practical forester in Germany; he had occupied a responsible position in connection with the forests of India; he was at present head of the Cooper's Hill College; he had to do management on his own account of a large area of wood-land upon the Continent. He was not only a practical forester, but also a forester in the widest sense under exceptional obligation to him for having come to address them upon a subject which greatly interested this Society.

Professor SCHLICH, who was cordially received, said his subject was Forestry Education, which he knew had occupied their attention a good deal in recent years. The first point which demanded attention was whether a case for better forestry education than that which had hitherto been obtainable in this country had been made out. Forestry was an industry, and like all other industries, it was subject to the law of supply and demand. Until a recent time the demand was for arboriculturists and not for silviculturists. That demand was met by the corps of gentlemen who attended to arboriculture on the various estates of this country. To expect that these gentlemen should suddenly turn into experienced silviculturists to suit a demand which only lately had sprung up was hardly fair. Until recent times the economic question was, as far as the bulk of British wood-land was concerned, of minor importance, since these wood-lands were mainly devoted to other objects, and it was, however, a change had come. Agriculture had fallen low, and the rent-roll of many proprietors had been seriously affected. The economic or financial importance of wood-lands and the profitable utilisation of waste lands had come to the fore, and it was necessary to have a considerable number of skilled silviculturists, or wood managers, who were fully acquainted with the economic aspect of the industry. This was all very well, but forests which had hitherto been managed for other objects could not suddenly be converted into what might be called economic forests. The difference lay in the fact that in the former case a considerable space of time, and it demanded the greatest skill of the silviculturist to effect it without loss to the proprietor. The thing could be done, but it required the training of wood managers on lines somewhat different from those hitherto followed in this country. To let them understand the difference between the two things, Professor Schlich went on to discuss the question why the timber now produced in Britain could not compete with that imported from abroad. They were aware that the great drawback which forestry laboured under in this country was the absence of a regular demand for home-grown timber. Up to a comparatively recent date, as a matter of fact, the contracts for Government contracts that home-grown timber would not be allowed to be used for constructive purposes. Why did such a condition of things exist? It was due to two causes, the inferiority of the quality of the home timber as compared with that imported from abroad, and also because it came into the market at irregular intervals and in fluctuating quantities. These drawbacks could only be remedied by a more systematic management of the forests. Under proper conditions, a regular market for home timber could be developed; and with better management it also showed that the effects of gales could be, to a certain extent at least, neutralised.

What enabled gales to do mischief was the fact that often an open face was left to the wind. A great deal could be done to protect woods from the violence of gales by looking after the edge trees, and by planting along with shallow-rooted trees with deeper roots for their protection. What the skill of the forester could do in that respect he instanced by a reference to the forests of Saxony, where the common spruce was the best-lying tree. There it yielded heavy crops, of which 80 per cent were classed as timber, which was used for a variety of constructive purposes, and also for the manufacture of paper pulp, not only in Saxony, but in the whole of the Continent. The spruce was very liable to be thrown by wind—in fact, no tree was more liable; but in Saxony the precautions were such that the damage done by gales was wonderfully small.

The next point discussed by Professor Schlich was natural versus artificial regeneration. Each method, he showed, had its advantages under certain circumstances, but on the whole he was of his impression that the aid of artificial regeneration as being the best influence on the economic system of management of woodlands.

The next subject of inquiry was whether there was a sufficiently large field open to them for extended effort. An examination of the tables of imports and exports which were issued annually showed that the net import represented a sum of money by no means to be despised. Taking, for instance, the returns for the years 1894-95, it appeared that the annual average imports of timber, including wood-pulp, were 7,000,000 tons, representing a value of £15,000,000, of that sum £4,000,000 went to the colonies and £15,000,000 to foreign countries. By going back some years it would be seen that the average imports had increased by £2,000,000 a year during the last eight years. They might well ask themselves the question whether, if not the whole, at any rate a considerable portion of that timber could be produced in the United Kingdom. The country, he said, had a surplus of the return showed that as far as the climate is concerned about £17,000,000 worth of the timber imported could be grown at home, leaving £2,000,000 for the timber of species—teak, mahogany, &c.—which had no chance of thriving in these lands. Of the £17,000,000, no less than £14,500,000 repre-

sieve, rubbing the fibrous portions of the leam through it. To one bushel of this kind of compost add 1 lb. of Thomson's Vine-manure. Crock the pots carefully, placing some of the rougher parts of the soil over these, and pot the plants firmly. It is important that the growth made should be matured as it progresses, and firm potting helps this. If the soil is moist, as it should be when used, no water will be required for a day or two. After March the plants should not be allowed to suffer lack of moisture at the roots, nor be kept constantly wet. Sometimes the leaves become pale in tint, showing that the amount of water in the soil is in excess of the needs of the plants, and less must be afforded, keeping the soil almost dry for a few days for a week. I have known cases of this kind of so stubborn a nature that recourse had to be taken to giving such plants weak doses of sulphate of iron, so as to restore the green colouring. After potting, place them again on the shelves, and keep them there till the roots reach the sides of the pots; then place a tick to each, and remove to a cold frame or pit, standing them upon coal-ashes not far from the glass, keeping the frame rather close for a day or two, and afterwards admitting air more or less according to the state of the weather. On very fine days in March the lights may be taken off for a few hours. If green or black-fly appears in the points of the stem, stir the mixture with tobacco-powder without delay. *E. Molyneux.*

FRUIT.—AVERAGE WHOLESALE PRICES.			s. d. s. d.		
Apples, Wellington,	per sieve	6 0-7 0	Grapes, Gros Colmar, 2nd qual.,	per lb.	1 6-1 9
— Alicante,	1st quality,	1 6-2 0	— Muscats, Eng. lib., 1st quality	per lb.	4 0-6 0
— Alicante, 2nd quality,	per lb.	1 0-1 2	— Muscats, 2nd qual.,	per lb.	5 6-6 0
— Gros Colman, selected,	per lb.	2 0-2 6	Nuts, Cob, p.100 lb.	22 0-23 0	
			Pine-apples, St. Michael, each	3 0-5 0	
VEGETABLES.—AVERAGE WHOLESALE PRICES.			s. d. s. d.		
Artichokes, Globe,	per doz.	3 0	Cucumbers, home-grown, select.	per doz.	10 0-12 0
— Chinese (Stachytarictaria),	per lb.	0 3	Mushrooms (French),	per lb.	0 6-0 8
Beans, French, Channel Is.,	per lb.	1 6-1 9	Potatoes, New Kidney, Channel Is.,	per lb.	0 5-0 6
— Madras Kidney, per bkt. of 8 to 10 lbs.	3 6-4 0		— Kidney Potatoes, French, lb.	0 2-0 2½	
Cauliflowers, St. Malo, per doz.	1 0-3 6		— Ebury (French),	per doz.	1 0-1 3
Cauliflowers, Cherbourg, per doz.	1 3-1 9		Soa Kale, per punnet, 8 to 4 lbs. weight	1 0-1 3	
Cauliflowers, Cornwall, per crate	11 0		Tomatoes, Canary Islands, per case, about 12 lb.	4 0-5 6	

PEAS. Demand has been rather more active the last day or so, without any improvement in prices, which run as follows:—Dunbar Maincrops, 85s. to 90s. per ton; Dunbar Saxons, 70s. to 75s.; Lincoln Maincrops, 60s. to 75s.; do. Saxons, 60s. to 75s.; do. Giants, 50s. to 60s.; Blacklands, 35s. to 45s. *John Bath.*

Obituary.

THOMAS BEDDARD.—We regret to announce the death of Mr. Beddard, head gardener at Stoneleigh Abbey, Kenilworth, which occurred at that place on Sunday, January 24, at the age of fifty-eight years. The deceased, who seemed to be in his usual health, died suddenly from some affection of the heart. He had held the post of head gardener to Lord Leigh for seventeen years, and was well known and respected throughout the county. The deceased gardener leaves a widow, but no children.

MARKETS.

COVENT GARDEN, FEBRUARY 4. [We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Thursday, by the kindness of several of the principal salesmen, who revise the list, and who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general averages for the week preceding the date of our report. The prices depend upon the quality of the samples, the supply in the market, and the demand; and they may fluctuate, not only from day to day, but often several times in one day. *E. J.*]

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.			s. d. s. d.		
Anemone, doz. bun.	3 0-6 0	Orchids:—			
Aruna, p. 12 blooms	4 0-6 0	Cattleya, 12 blms.	6 0-12 0		
Bourvardia, per bu.	6 0-9 0	Odontoglossum crispum, 12 bu.	2 0-6 0		
Carnations, p. doz. blooms	2 0-3 0	Pelargonium, scarlet, per 12 bun.	6 0-9 0		
Chrysanthemums, doz. bun.	2 0-6 0	— per 12 sprays	0 6-0 9		
— doz. blooms	1 0-3 0	Poinsettias, 12 bl.	4 0-9 0		
Eucharis, per dozen	4 0-5 0	Pyralis, 12 bu.	2 0-4 0		
Hyacinths (Roman), doz. sprays	0 6-1 0	Roses (French), per doz. blooms	1 0-2 0		
Lilac, w/b. (French), per bunch	3 6-5 0	— Tea, per doz.	1 0-1 6		
Lilium Harist, per doz. blooms	5 0-8 0	— yellow (China, chab), per doz.	6 0-9 0		
Lily of the Valley, dozen sprays	0 6-1 0	— red, per dozen	1 0-2 0		
Maidenhair Fern, per 12 bunches	4 0-8 0	— pink, per doz.	3 0-4 0		
Marguerites, per 12 bunches	2 0-4 0	— Primrose, p. doz.	1 0-2 6		
Mignonette, per doz. bunches	4 0-6 0	Snowdrops, doz. bunches	1 0-2 0		
— per bunch	1 0-1 6	— Cast. bun.	2 0-3 0		
Narcissus, various, per doz. bunches	1 6-3 0	— (Eng), per bun.	1 6-2 6		

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.			s. d. s. d.		
Adiantum, per doz.	4 0-12 0	Forme, small, doz.	1 0-2 0		
Azalea, per doz.	1 0-7 6	— various, doz.	5 0-12 0		
Cyclamen, per doz.	2 0-12 0	Ficus elastica, p. doz.	1 0-7 6		
— various, p. doz.	2 0-12 0	Foliage plants, per doz.	12 0-36 0		
Evergreen Shrubs, in variety, doz.	6 0-24 0	— Geranium, per doz.	9 0-15 0		
— hydrants, doz.	10 0-15 0	— Hyacinths, per doz.	0 12-0 12		
		— Marguerites, per doz.	8 0-12 0		
		— Palm, various, p. doz.	2 0-12 0		
		— speciosa, p. doz.	10 0-8 4		
		Poinsettias, per doz.	9 0-12 0		
		Solanum, p. doz.	9 0-12 0		
		Tulips, doz. pots	6 0-9 0		



[The term "accumulated temperature" indicates the aggregate amount, as well as the duration, of degrees of temperature above or below 42° Fahr. for the period named; and this combined result is expressed in Day-degrees.—A "Day-degree" signifying 1° continued for twenty-four hours, or any other number of degrees for an inversely proportional number of hours.]

DISTRICTS.	TEMPERATURE.		RAINFALL.		BRIGHT SUN.
	ACCUMULATED.	PERIOD.	PERIOD.	PERCENTAGE.	
ABOVE 42° FOR THE WEEK ENDING JANUARY 30.	Day-deg.	Day-deg.	Ins.	Per cent.	
Below 42° for the week ending January 30.	Day-deg.	Day-deg.	Ins.	Per cent.	
ABOVE 42° FOR THE WEEK ENDING FEBRUARY 3.	Day-deg.	Day-deg.	Ins.	Per cent.	
Below 42° for the week ending February 3.	Day-deg.	Day-deg.	Ins.	Per cent.	
ABOVE 42° FOR THE WEEK ENDING FEBRUARY 3.	Day-deg.	Day-deg.	Ins.	Per cent.	
Below 42° for the week ending February 3.	Day-deg.	Day-deg.	Ins.	Per cent.	
ABOVE 42° FOR THE WEEK ENDING FEBRUARY 3.	Day-deg.	Day-deg.	Ins.	Per cent.	
Below 42° for the week ending February 3.	Day-deg.	Day-deg.	Ins.	Per cent.	
ABOVE 42° FOR THE WEEK ENDING FEBRUARY 3.	Day-deg.	Day-deg.	Ins.	Per cent.	
Below 42° for the week ending February 3.	Day-deg.	Day-deg.	Ins.	Per cent.	
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is easier than to inarch or join the two. In any case, it will be advisable to wait till leaf-growth has begun in both, so that bleeding may not hinder the union. It may be done by simply taking off with a knife a slice of equal size from each, bringing the cut surfaces accurately together, and binding them firmly. Clay or grating-wax may be placed round the junction to prevent the ingress of water. Vine-shoots in a green estate readily unite in the same manner, and this method affords a means of readily inarching. Vine-spurs of one variety with other varieties by means of Vines growing in pots, which may be for convenience sake suspended from the trellis.

LOBELIA PROPAGATION: T. F. Seed of *Lobelia erina* specimens in variety is purchasable at the seed-dealers, and it comes fairly true to colour and habit; but the propagation of the different varieties from true stocks for planting in beds is advisable from cuttings only. There are in all gardens positions where exactness of the shade of colour and uniformity of habit are of not much consequence, and in those seedlings would answer; as also for culture in window-boxes, pots, as edgings to vases, &c. The pretty half-trailing *Lobelia gracilis* is an admirable plant for all of these purposes, and may be raised true from seed. Sow in gentle heat at the end of the present month, prick off early, placing them in a hot-bed-pan; establish in heat, but remove afterwards to cooler quarters, or at least where more air can be afforded the plants. There are various methods of raising seedling *Lobelias*. Where many thousands are required, the seed is sown broadcast and thinly on the surface of a finely-sifted 6-inch layer of leaf-mould and loam, with a good deal of shree sand in it, resting on a mild hotbed of tree-leaves and stable-litter, well prepared, and which has a steady heat of 80°; or seed may be sown in pots, pans, or cutting-boxes in the same kind of soil, placing them in a hot-bed-pan. Care should be taken to prevent the drawing up of the plants by affording air more or less to them from their first appearance above the soil, any neglect of this precaution, or letting the top-heat rise above 70°, will lead to wholesale damping off. This applies also to cuttings. The seed should not be covered, but pressed into the surface of the bed with a smooth piece of board, and a day or two after sowing watered with a very fine rose-can. Keep a sharp outlook for snails of all kinds, woodlice, &c. When a true seedling or two have been made, prick-off into other frames or pans must begin, and be carried out as fast as the seedlings become fit, which may occupy a fortnight altogether. Less heat is required by the plants at the top and bottom after April sets in, and towards the end of the month or early in May the plants should be sufficiently hardened to be safely placed in cold frames—at the least as regards the earliest-raised seedlings or cuttings. Some gardeners prick-off both into small pots, say one in a long Tom, two in a large 60, or three or four in a small 48; others, again, scoop out small holes or narrow channels in fresh turves, placed on mild hot-beds, and filling these with fine mould, prick off the young plants at 2 to 3 inches apart.

MANURES: Suburbs. We should imagine that you get in the same phosphate of potash. What is probably intended is a manure consisting of mineral or other phosphate of lime, and sulphate of potash, which along with sulphate of ammonia, insoluble and semi-dissolved bones, guano, &c., form the basis of many of the artificial soils. Probable cost 8s. per cwt.

MEALY BUG ON VINES: E. M. As a further means of destroying and rooting out the pest, you should wheel away the upper crust of the border if it is an inside one; linewash the walls, and fill all crevices in the same and between the brickwork and the woodwork with hard mortar; and having washed the Vines in the manner described in your note, put on some smothering mixture of soft soap, clay, cow-dung, and soot. We are not acquainted with Mr. J. H. Richards' liquid insecticide, but it may be worth a trial.

NAMES OF PLANTS: Correspondents not answered in this issue are requested to be so good as to consult the following number.—P. Sventini. 1, *Asparagus plumosus*; 2, *A. plumosus nanus*; 3, *A. scandens deflexus*.—*R. M.* 1, *Cyathea dealbata*; 2, *Davallia (Microlepia) platyphylla*; 3, *Cibotium Schiedeii*; 4, *Doodia caudata*; 5, *Draecena Fraseri*; 6, *Maranta Veitchii*.—*Onoid.* Two varieties of *Ocimum* O'Erleanum, *Michx.* f., an ally of

O. pubes.—*Dantry.* Your *Cypripedium* is a form of *C. x Lænanum*, a class already overcrowded with varietal names.—*Gardener.* Your specimen appears to be *Bignonia venusta*, but it usually carries more blooms in a cluster.—*G. Bartle.* *Chimonanthus fragrans*.—*Southampton.* One appears to be *Philæa buxifolia*, the other we do not recognise; neither has any flower to it.—*E. B.* As far as we can judge from the rather poor specimens, they are *Galanthus Elwsi*.

NOTICE TO QUIT: Southampton. You are entitled to a month's notice or a month's payment, in the absence of any specific agreement. We have no record of special cases.

ORANGE TREES TO FLOWER IN SEPTEMBER: Gardener. If you can retard the plants, by keeping them cool, and by affording just sufficient water as will keep them in health; then, under the excitement of warmth and sunlight, and more water at the root, they may be got in full flower at the desired time. The season of flowering is naturally a long one. The flowers must be "wired" if used in bouquets.

POTATO SETS WITH ONLY ONE EYE, &c.: U. M. The Bishop was right in recommending the removal of all the other "eyes," but few persons do it, they thinking the risk too great. As to staking and tying the Potato-stems, this is not likely to be adopted by many gardeners, although it, doubtless, has some advantages; these, however, would scarcely counterbalance the cost of the stakes, labour, &c. Wide planting would influence the weight of crop quite as well.

RENOVATING A BADLY-SOWN LAWN: A. H. O.K. If it is very patchy, or has a settled unevenly, it will be better to dig it over half a spit deep, when it is in a workable condition, and leave it untouched till the end of March or beginning of April, when it should be trodden evenly all over, and made level, either a dead or "hanging" level, as the case may be; finally raked over, taking off the rougher stones, &c., and sown on a dry, quiet day, taking care to sow the *Lolium perenne tenue* (*Rye-grass*) first, and to hack it in with an iron rake. The following is a good mixture of grasses and Clovers for an acre of land.—*Lolium perenne tenue*, 20 lb.; *Cynosurus cristatus*, 5 lb.; *Festuca duriuscula*, 3 lb.; *F. ovina tenuifolia*, 2 lb.; *Poa nemoralis*, 2 lb.; *P. n. sempervirens*, 2 lb.; *P. trivialis*, 2 lb.; *Trifolium repens*, 6 lb.; *T. minus*, 2 lb. If the soil be rich and heavy, 1 lb. of *Festuca duriuscula* and 2 lb. of *Cynosurus* additional may be used. The sower should fasten a piece of board 2 feet by 1 foot to each foot. Rake in the seed after sowing with a wooden wide-toothed rake, and cross-roll the land well as a finish to it.

SELLING TWO TO THREE DOZEN ROSE BLOOMS PER DAY. F. T. The blooms being out and brought to market in a half opened state, should find ready purchasers among florists and market salesmen. You should come up to the market and make enquiries for yourself concerning those things of which you are ignorant: no marketing exists. Articles on the subject have doubtless appeared in these pages, but to find them would involve much expenditure of time which we can ill afford to give; and nothing but experience in the markets will supply the knowledge of which you stand in need.

SOCIETIES' ADDRESSES: E. M. You may obtain the addresses of the societies named by applying to Mr. W. Chubb, 1, Gt. College Street, London, S.W.

SOVING SEEDS OF CONIFERS: Conifer. The land should be open—not shaded by timber trees, but it will be the better for the shelter of hedges, or of young plantations of evergreen trees. It should be manured, if poor, with decayed stable-manure or cowyard-manure (the first for stiff soils, the latter for porous, gravelly loams), and dug two spits and the shovellings in depth, if it will bear it, that is, if the infertile subsoil be not brought up; as to do that would render the land unfit for the purpose. The seed of *Pinus*, *Abies*, and Larch are usually sown thinly broadcast in the spring, in 4-foot wide beds, and slightly covered with fine soil, sifted if possible from that in the alleys. The land should have been dug several months before, so as to let the soil settle, and should be levelled and trodden evenly all over, and then raked to a fine till, removing large stones and rubbish. The beds should be lined out, the outlines being cut

with a spade. We are unable to answer you as to the price per 40 yards run of seedling Larch, Spruce, &c.; but knowing the price per 100 of one-year-old stuff. We are sure that it would not be high.

SPARROWS: U. M. We can only advise you to shoot, trap, net, and take the nests, and not kill the different kinds of hawks. Do not, however, use poisoned grain.

STRAWBERRY: Thornton Heath. The plant is a genus belonging to the natural order Rosaceæ, distinguished by its ten-cleft calyx, five petals, and its carpels or pips embedded in a fleshy receptacle which we call its fruit.

THE COST OF KEEPING NURSERY-LAND CLEAN AND FREE FROM WEEDS: Conifer. Unless very much infested with weeds, one man ought to be able to keep 3 acres in a clean condition, except in wet summers; the price per acre will, therefore, depend on the average labourer's wages of the district in which the nursery lies.

TOMATO SOIL: C. Boyle Woolley. There would be nothing to fear this year by using the soil as it is, only adding a rich mulch if the plants seemed to need such later on.

TRAPS FOR WOODLICE: B. B. The older commonly-employed contrivances for catching woodlice consist of pots, drain-pipes, &c., filled with soft hay, staled all on the floor, but not quite touching it, under which they will hide in the presence of daylight or artificial light, and are then readily destroyed. The hollowed-out half of a Potato you mention is a good one, but it is not sufficiently wholesale in its action.

TWELVE AZALEAS: W. White. Apollon, Bernhard Andreas, Borsig, Deutsche Perle, Etstandard de Flandre, Iveryana, Le Flambeau, punctulata, Roi des Belges, Roi Leopold, President Oswald de Kerchove, and Sigismund Rucker. The price for nice plants in 32's is about 24s. per dozen.

VIOLETS: U. M. Much will depend on the management of the plants previous to, and after putting them into the frames. The Neapolitan is the latest to flower of the three varieties you mention.

WIRING A PEACH WALL: Norfolk. You would be enabled, in spite of the buttresses occurring at 12-foot intervals, to wire the wall as closely as possible, if you place the wires vertically, which is the better method, as the lengths being only as long as the wall is high, saggy but little, and they can be fixed at the top and bottom with eyes or studs only slightly stronger than those used intermediately. Wire when run horizontally requires to be very stout to enable it to be strained by means of *raidisseurs*. The size of wire to be used for vertical work need not be stronger than one-tenth of an inch diameter, if of plain iron.

COMMUNICATIONS RECEIVED.— Edward Webb & Sons.—J. D. S.—Dr. Francoschi, Santa Barbara.—E. Anfrad, Genova.—W. E. H.—H. H. DO.—W. G. S.—E. H. J.—W. E. G.—M. D.—J. A.—J. T. L.—R. B. Luid & Sons.—E. M.—I. D.—J. F. S.—J. T. Bennett-Poe.—J. O'B.—M. E. M.—J. P. Shaw Storey.—C. T. D.—J. D.—C.—H. J. C.—A. C. F.—T. C.—R. L. H.—J. F. McLeod.—J. Leslie.—W. E. B., Grenada.—R. M.

SPECIMENS, PHOTOGRAPHS, &c., RECEIVED WITH THANKS.—J. A.—J. P. S.—Dr. Francoschi.

CONTINUED LARGE INCREASE in the CIRCULATION OF THE "GARDENERS' CHRONICLE."

IMPORTANT TO ADVERTISERS.—The Publisher has the satisfaction of announcing that the circulation of the "Gardeners' Chronicle" has, since the reduction in the price of the paper,

Increased to the extent of more than 90 per cent., and that it continues to increase weekly.

Advertisers are reminded that the "Chronicle" circulates among COUNTRY GENTLEMEN, AND ALL CLASSES OF GARDENERS AND GARDEN-LOVERS at home, that it has a specially large FOREIGN AND COLONIAL CIRCULATION, and that it is preserved for reference in all the principal Libraries.



THE Gardeners' Chronicle.

SATURDAY, FEBRUARY 13, 1897.

AMERICAN TREES.*

THE issue of the tenth volume of this remarkable book reminds us that it is approaching completion—already the Conifers have been reached. Another volume will, we presume, include the remainder of the order, or nearly so, and then there will be indices and tables to finish up with. We have nothing to add to the eulogium already passed on the general features of this superb book. It must, in the future, be the standard book of reference in all matters relating to the trees and shrubs of America.

It seems to us, nevertheless, on this side of the Atlantic, unfortunate that the author should have adopted the Neo-American, or, perhaps, we might call it the Kuntzean system of nomenclature; but if that is really to be the system of the future in the States, we can hardly blame the author for wishing that his book should be in harmony with the circumstances. In the present volume there is no change in nomenclature of any great importance, except that Torreya is made to give place to *Tumion* on the authority of Rafinesque. This name, *Tumion*, we may say, is of later date than Torreya, and is entirely passed over in the *Index Kewensis*, as also in Baillon's and in Eichler's recent monographs of the Conifers. As the *Index* and the synonymy sufficiently enlighten the reader, this revival of Rafinesque's name is not, after all, a matter of serious consequence.

The present volume is specially interesting to British horticulturists, as containing a full account, with beautiful illustrations, of the species of *Yucca*. Of these no fewer than eight are described in this volume. Whilst the technical descriptions are most important for the sake of the record, the notes and incidental information are of great interest to the general reader. In this way so vast an amount of miscellaneous information is got together that the book becomes a veritable encyclopædia. We extract, by way of illustration, a few miscellaneous paragraphs relating to these plants:—

"*Yucca filifera*, the largest of the *Yuccas* now known, is a tree often 50 feet in height, with a trunk frequently 20 feet tall, and 5 feet in diameter, and many wide-spreading branches, and is distinguishable from all other species by its pendulous panicles of flowers and fruit, which are often 6 feet in length. It forms open forests of great extent on the plains, which rise from the lower Rio Grande to the Sierra Madre, and ranges southward to San Luis Potosi. Introduced nearly forty years ago into the gardens of Europe, it is also occasionally cultivated in some of the Texan towns along the Rio Grande, and in Northern Mexico, where it is often used in the neighbourhood of Monterey and Saltillo to form stockades.

Yucca filamentosa.—This stemless and very variable species inhabits sandy barren soil and abandoned fields in the neighbourhood of the coast, from southern Maryland, southward to Florida, and westward along the southern borders of the Gulf States of Louisiana. It is the best known of all the *Yuccas* in northern gardens, which it enlivens in midsummer with its great panicles of large ivory-white flowers. The tough leaves of this species are twisted and used in the southern States for hanging bams and for other domestic purposes. Attempts have been made to utilise their fibre commercially; but, though it is exceedingly strong and cheaply produced, the shortness of *Yucca*-fibre lessens its value, and it has not yet been successfully introduced into commerce.

Yucca arborescens.—About twenty-five years ago at Ravenna, in the Solidad Pass, just south of the Mohave Desert in California, a company of English capitalists established a mill for the manufacture of the wood of *Yucca arborescens* into paper-pulp. A quantity of paper was made from the pulp, and it is said that several editions of the *London Telegraph* were printed upon it; but the high cost of manufacture more than consumed the profits of the enterprise, and it was soon abandoned. . . . First noticed by Frémont in 1844 on the Mohave Desert." The Joshua-tree, as it was called by the Mormons of Southern Utah, was not described until many years later. Railroads now cross the Mohave Desert, and from the window of his car the traveller can see the forests of *Yucca arborescens* stretching indefinitely into the hazy distance, unlike any other forest on the continent, and without a rival in singularity and weirdness."

Following the *Yuccas* come the Palms, of which no fewer than seven or eight species are enumerated, five from Florida and other southern States, and three from California and Mexico. After the Palms come the Conifers, which are numerous on both sides of the continent, some even extending into the sub-tropical regions. In the present instalment we have the Taxaceæ, the Junipers comprising nine species; the Cyprresses, of which there are seven; the *Thuyas*, of which two are mentioned; *Libocedrus* being represented by one species.

As to the *Thuyas*, there are some curious facts relating to their history which may be here alluded to. There is *Thuja occidentalis*, a native of the Atlantic States, and which has afforded a large number of varieties. These are well known in our gardens as forms of the American *Arbor-vitæ*. There is no doubt at all about this species. On the Pacific side, northwards, is another species which again is easily recognisable—it is the one called by Nuttall, in 1834, *T. gigantea*, but which has also been called in gardens *T. Lobbi*, *T. Craigana*, and *T. Menziesii*, three names that should be at once abandoned. This is a splendid fast-growing species, bearing clipping and pruning, and which bids fair to form a useful timber tree.

So far, all is plain-sailing—the difficulty begins when *T. plicata* comes in. The first-published mention of the name *plicata* is in James Donn's *Hortus Cantab.*, ed. 4 (1807). Incidentally, it may be mentioned that by almost all subsequent writers the name is written *Don*, and the sixth edition (1811) is quoted when the fourth is the one in which the plant is first mentioned. Successive botanists have not verified their references, but have quoted one from the other. But this, in this instance, is a matter of little moment. More important for us is it to note that *plicata* is a *nomen nudum*—a name with no description attached, and which therefore should have been passed over. It was not ignored, probably,

* We continued in a southerly direction across the plain to which, as well as to all the country, so far as we could see, the *Yucca*-trees gave a strange and singular character. (Frémont, *Rep.* 257.)

because Donn adds the information that the species was discovered by Née at Nootka Sound, and introduced in 1796. This information led to the inquiry who Née was, and where his specimen of *Thuja* might be found. The following extract satisfies the first question:—

"Luis Née, a Frenchman, naturalised in Spain, and one of the botanists who accompanied Malaspina on his voyage round the world. He was a most indefatigable collector, and was endowed with considerable scientific ability. On the authority of Colmeiro, Née was the first to make the interesting discovery of the existence of *Rhododendron ponticum* in the Iberian peninsula. Malaspina's voyage was made during the years 1789 to 1794; and when Née landed at Cadiz he had made a collection of dried plants estimated at 10,000 species, including 4000 new to science. Like many other fine collections made by Spanish naturalists, it has been permitted to be at Madrid unused. There were also upwards of 300 drawings by various artists." *Hemslcy, "Biolog. Centr. Americana,"* iv. p. 119. (See Colmeiro, "*La Botánica y los Botánicos de la Península Hispánico-Lusitana,"* p. 183.)

The answer to the second question was suggested by a reference to Lambert's *Pinus*, the 8vo edition, dated 1832. Lambert mentions (p. 127, n. 61) *Thuja plicata*, or Née's *Arbor-vitæ*, describes it, and quotes Donn's name. The localities given are New Spain (Mexico), where it is alleged to have been collected by Née, and the north-western coast of America, at Nootka Sound, where it was found by Menzies. "The specimens of this species collected in the expedition under Malaspina by Don Luis Née, although marked from New Spain, are most likely from Nootka Sound, where the tree was observed by M. Menzies, to whom it was probably we are also indebted for its first introduction to our collections, as there does not appear to be any marked difference between the wild and the cultivated samples, unless that the branches of the latter are broader and more compressed." Lambert, *l.c.*

Furnished with these clues, an examination of the herbarium at the British Museum was the next step, and there we found two specimens from Menzies, and called *T. Menziesii*, with a MS. note of Salisbury's, and an imperfect specimen labelled "*Thuja ex Nov. Hispan. Née, iter T. plicata, nob.*" Cavanilles' name being written on the back, as if Cavanilles was the "*nobis*." These specimens, we think, belong, without doubt, to what we now call *T. gigantea*. If this be so, *T. plicata* is the earlier name, and we suppose some of the nomenclature purists would forthwith adopt it.

These circumstances induced us once more to investigate the *T. plicata* of gardens, and we are indebted to the authorities at Kew, Cambridge, to Mr. A. D. Webster, and to other friends, for specimens of *T. plicata* as now cultivated, and which undoubtedly have nothing to do with the original *plicata* or modern *gigantea*, but which equally certainly are varieties of *T. occidentalis*.

One more question arises, and that is, whether the "*plicata*" of British gardens at the beginning of the century was the same as that still in cultivation; but this point we cannot determine.

Lastly, in order to bring our story down to the present time, we append what Professor Sargent says of the garden-plant now known as *T. plicata*:—

"A small compact *Thuja*, regular in outline, and said to have been discovered by Menzies on Vancouver's Island in 1796, as well as several forms raised in gardens, has long been cultivated in Europe

* *The Silens of North America* . . . by C. S. Sargent, Director of the Arnold Arboretum of Harvard University . . . Vol. x., Libiaceæ—Conifere. (Boston and New York: Houghton, Mifflin & Co.)

under the name of *Thuja plicata*. (D. Don, *Cat. Hort. Cantab.*, ed. 6, 249 [1811]; Lambert, *Pennis*, ii., 19; Spach, *Hist. Fc'y.*, ix., 342; Endlicher, *Syn. Confif.*, 61; Carrière, *Traité Confif.*, 102; Henkel and Hochstetter, *Syn. Nudth.*, 277; Gordon, *Pinetum*, ed. 2, 406; Parlatores, *De Candelis Prodr.*, xvi., pt. ii., 457; Beissner, *Handb. Nudth.*, 44). There is great uncertainty in regard to the true character of the plant originally described by Don, but most of the individuals now cultivated under this name are forms of *Thuja occidentalis*, although *Thuja gintegra* is also occasionally cultivated as *Thuja plicata*. No tree resembling the *Thuja plicata* of gardens has been found in North-western America, and this plant, like most of its varieties, is best considered a garden form referable to *Thuja occidentalis* rather than to *Thuja gintegra*.*

Sequoia is represented by the two well-known species, the Wellingtonia and the Redwood; the deciduous Cypress, *Taxodium distichum*, being the last in the volume. Of all these, in addition to the letter-press, there are excellent illustrations giving the details that are essential to botanists, but which the ordinary artist omits or slurs over. This enumeration, bare though it be, bears out our statement, that this volume is of special interest to horticulturists. We look forward eagerly to the remaining volumes, comprising the history of the American Pines, Firs, Spruces, and Hemlocks.

INFLUENCE OF FRUIT-BEARING ON THE MECHANICAL TISSUE IN FRUIT-TREES.

THE December number of the *Annals of Botany* contains a paper by Mr. Adrian J. Pieters on "The Influence of Fruit-bearing on the Development of Mechanical Tissue in some Fruit-trees." The author mentions, among other authorities on this subject, Sorauer, who published more than one paper relating to it. Mr. Pieters says that:—"The inference drawn from Sorauer's work is that cultivation, and more directly fruit-bearing, may become injurious to a tree by reason of the greater development of cortex, and the proportionally smaller amount of xylem produced in the fruit-bearing shoot, which renders it weaker mechanically, and more liable to injury by frost.

I shall present here a study of the effect of fruit-bearing on the permascent mechanical * tissue of the tree, in order to show the influence upon any tissue-system of the strain to which a tree is subjected in the production of fruit and seeds."

Four species, namely, Apple, Pear, Peach, and Plum are reported upon by Mr. Pieters, whose observations are concluded in the following summary:—"The study of these four species seems to warrant the following conclusions, in answer to the questions proposed at the beginning of this paper—

1. The one-year-old fruit-bearing shoots of the Apple and the Pear have less wood in proportion to their diameter than does the vegetative shoot of the same age. This is due, in the Apple, largely to an increase in the cortex, and in the Pear solely to a great increase in the cortex and the pith of the fruit-bearing shoot. It does not, however, appear, from the structure of the shoot; that the fruit-bearing shoot is weaker than the vegetative. The former is well supplied with supplementary mechanical tissue, which is distributed at those points where it is most needed, and thus gives it an increase of strength for the fruit-bearing year, which fully makes up for the difference in xylem development.

2. In the Peach the fruit-bearing shoot has more wood than the vegetative shoot, and the walls of the wood-cells are as thick in the former as in the latter.

* By "mechanical tissue" is meant all those collections of cells having thick and lignified walls, and serving to give strength and firmness to the shoot. Since the wood-cylinder is the principal collection of such cells, and is the only one capable of accurate measurement, most attention will be given to it, with incidental reference to supplementary mechanical cells, when these are of importance.

3. In general it may be said that the effect of fruit-bearing upon the tissues is local. In the Apple and Pear it is perceptible throughout the one-year-old shoot; in the Plum and Peach it is confined to a small area in the immediate neighbourhood of the fruit-stalk.

4. The local effect of fruit-bearing tends to an increase of cells, with a decrease in the thickness and lignification of the walls of the wood-cells. The cortex is especially enlarged, giving rise in the Apple and Pear to the swollen condition of the fruit-bearing shoot.

5. In all cases the increase in growth is greatest on the side near to the fruit-stalk, although the wood in the Apple and Pear is best developed on the side of the lateral vegetative bud.

6. The local effect of fruit-bearing on the wood-cylinder disappears with time. The study of Apple-shoots that had borne fruit during their first year showed that in the two or four years following there had been a rapid increase of wood, especially on the side of the fruit-scar. This side was weakest at the end of the first year. These shoots at the end of three and five years had a better xylem-development than shoots of the same age that had never borne fruit.

7. Fruit-bearing has a temporary local effect upon the lignification of the walls of wood-cells. It prevents their lignification wholly or in part, according to their distance from the fruit-stalk. The lignification of other cell-walls is promoted by fruit-bearing. In the fruit-stalk the greatest part of the tissue has become lignified, and in the upper part of the Apple—and Pear—shoot there is an abundance of well-lignified sclerenchyma and hard bast, which is either not found in the vegetative shoot or only sparingly so."

ORCHID NOTES AND GLEANINGS.

A GROUP OF CUT BLOOMS.

MR. J. P. SHAW STOREY of Bursledon obliges us with a photograph, showing, as arranged in a group of specimen-glasses, *Lycaste Skinneri* alba (4), *Laelia anceps* alba, *L. a. Sanderiana*, &c. The photograph is effective, but the arrangement would have been better had some sprays of *Asparagus* been intermixed.

CYPRIPEDIUM INSIGNE, SPOTTED VARIETY.

Flowers of a remarkably pretty and distinct variety of *Cypripedium insigne* is sent by Mr. W. Bolton, a cultivator of Orchids, and a florist at Wilderspool, Warrington. We may assume that when the plant becomes older and more vigorous, the flowers will doubtless improve, as those sent indicate a plant which is as yet not thoroughly established, the lower sepals, and tip of the upper sepals being imperfect. The flower lacks the usual brown tinting visible above the yellow colour of the petals, and except in a very slight degree, that also over the face of the lip; and the colouring consists in well-defined purplish-brown spotting on a yellow ground-colour, the distinct spotting extending to the inside of the pouch. The petals are broader than usual, and consequently display the peculiar spotting prominently; and the tip of the upper sepal is white.

DENDROBIUM JOHANNIS.

Originally discovered on York Peninsula, North East Australia, by the late John Gould Veitch, after whom it was named by Professor Reichenbach, and described in the *Gardeners' Chronicle* in 1865. This singular species has occasionally appeared in gardens, but it has never been plentiful. The plant resembles in habit, a stout, dwarf D. bigibbum, but it is readily distinguished by the fleshy, ligulate leaves from other species, although occasionally in a dry state its inflorescence has been taken for that of *D. undulatum*, a species to which the fresh flowers bear but a slight resemblance. The ascending flower-spikes bear numerous flowers, having narrow twisted sepals and petals; in colour, greenish tinged with brown, and a yellow lip, the side-lobes of which are purple-shaded. It is not a plant for anyone to grow in quantity, but

as a species it is acceptable. A specimen is sent by Mr. W. Bolton, florist, Wilderspool, Warrington, who also sends a strong twin-flowered *Sophranitis grandiflora*.

RUDBECKIA NEUMANNI OR NEWMANNI.

LAST autumn there was an inquiry about this plant in your columns, by the Rev. C. Wolley Dod, which I intended to have answered before now, but I was from home at the time the inquiry appeared, and forgot the matter on returning to work. To-day the subject was revived in my mind by finding a specimen so named in the herbarium of the late Mr. W. H. Gower. These two varieties are garden names for *R. speciosa* of Wenderoth, which Dr. Asa Gray keeps up as a species, and fully describes, with synonyms in his latest monograph of the North American Compositae. Whether *R. speciosa* is distinct in any broad sense from *R. fulgida* of Linnaeus, may be doubted, but, at any rate, for garden purposes it is the finest of the group to which it belongs, which includes *R. hirta*, L., with its many varieties. We have at Kew a specimen labelled *Newmanni* from Cobham Lodge, dried by the late Dr. Forbes Young in 1832, so that the name must have been floating about for more than sixty years. Another specimen, labelled *R. aspera*, from the same collection, is identical, so that it is probable the *R. aspera* of Desfontaine's tabular of the plants of the Paris garden, published in 1804; but as no description is given, there are no means of verifying this supposition. The name *speciosa* was published in an *Index Seminum* of the Marburg Garden, and dates back to 1828. *J. G. Baker*.

CRATEGUS.

(Continued from p. 88.)

C. Oryacantha (The common Hawthorn, Quick, May, &c).—This species is made up of two sub-species or varieties, viz., monogyna and oxycanthoides; these, although connected by intermediate forms, are distinct enough to be treated separately. Both have their attendant group of varieties.

Monogyna.—This comprises the greater bulk of the named varieties, and is to be distinguished by the flowers having only one style, and the fruits one seed. The leaves are larger than in the other group, somewhat wedge-shaped, and more or less deeply cut. Among the numerous forms, the following are the most noteworthy: *Aurea*, a very desirable plant, whose fruits are roundish and of a clear golden-yellow; this year they have been particularly abundant, giving the tree a most bright as well as distinct appearance, for there is no other Thorn with fruits of just the same colour. *Eriocarpa* has small woolly fruits. *Florescens* (or *tortuosus*) is a curiosity, its branches being twisted and contorted. *Horrida* is a form of dwarf habit with frequently stunted branches which are very formidably armed with cushions of spines. *Precox* is the Glastonbury Thorn, famous for the legend connected with its early flowering; unless hard weather sets in prematurely, it is generally to be seen with a few flowers open about Christmas or New Year's Day. *Stricta* is in habit almost as erect and fastigate as the Lombardy Poplar. Besides these there are many more whose names sufficiently denote their distinctive character, such as *pendula*, *laciniata*, *foliis argenteis*, *salisburifolia*, *ramulis aureis*, &c., &c.

Oxycanthoides.—This, the type of the second and smaller group, differs from *monogyna* by its flowers having usually more than one style, and by the fruits being one or two seeded. In foliage, too, it differs in its smaller leaves, which are frequently almost undivided, or with three shallow lobes towards the apex. This group comprises the valuable double flowering Thorns of which Paul's Double Scarlet is one of the best known. The botanical names are merely descriptive of the different colours and double nesses of the flowers (*fore pleno*, *albo*, &c.); it is not necessary to transcribe them.

C. pinnatifida.—A Chinese species, with long-stalked, pinnatifid or deeply-lobed leaves, the lobing being deepest at the base of the leaf; the blade is about 3 inches long, and as much in width, of a bright shining green, and glabrous on both surfaces, with the margins toothed. The flowers are white, and about three-quarters of an inch across; the dark, shining red fruits about the same in diameter.

Var. major.—This is a fine plant, and one of the most distinct and striking of the Old World Thrus. The foliage is more abundant than that of the ordinary *C. pinnatifida*, also of a deeper green, and much larger size. I have seen leaves during the past

C. Pyracantha.—This well-known evergreen shrub is a native of South Europe, and has been in cultivation in Britain since 1623. Although perfectly hardy in the open, its full beauty as a fruiting shrub is seen only when it is grown against a wall, or in some sheltered sunny corner where the wood can be well ripened. There is now in the Terrace Gardens at Richmond a small specimen, planted among dwarf evergreen on a sloping bank near a wall, which is a most beautiful object. The horizontal branches are loaded with pendent clusters of brilliant scarlet fruits. The leaves are $\frac{1}{2}$ to $1\frac{1}{2}$ inch long, ovate-lanceolate, crenate and glabrous. Each axillary branch ends in a

species from the Orient, allied to *C. Azarulus orientalis*, &c. It has deeply three or five-lobed leaves, which are 2 inches long, and glabrous on both surfaces; the lobes are cut almost longitudinally, and are entire, or only faintly toothed. The wood is dark-coloured, and armed with a few short, stout spines, not often more than half an inch long. The fragrant, pure white flowers appear in May and June. The fruits are ripe in September, thickish, yellowish-red, and three-quarters of an inch in diameter; they are glabrous, and the calyx-lobes at the top are short and triangular. The species is wild on Mount Sinai, hence Boissier's name. Lindley figured it as *C. maroccana* in the *Botanical Register*, t. 1855. *W. J. Bean.*

(To be continued.)

VARIORUM.

THE OLDEST PEAR-TREE.

We read in the *Illustrirte Garten Zeitung* for January that King John's Pear-tree at Toulou was overturned by a hurricane in the last week in November, 1896. The tree was supposed to be 600 years old, and the hole had a circumference of 10 feet. M. Chabaud, upon whose ground the tree had stood, has enquired of all the botanical garden authorities in Europe if trees of similar age and dimensions are known to exist elsewhere.

IMPORTANCE OF PHOSPHORIC ACID IN SOILS.

The element phosphoric acid is universally acknowledged to be one of the most important ingredients in manures; and after nitrogen, and in some instances potash, is the one substance of which ordinary soils stand in greatest need, and become the soonest exhausted.

Professor M. Risler, President of the National Agricultural Society of France, recently called attention to this subject, and stated that an average harvest of Wheat required for its development from 20 to 25 lb. of phosphoric acid per acre; while an average crop of Potatoes required from 25 to 30 lb. of phosphoric acid per acre. A forest of Pine-trees requires 4.75 lb. of phosphoric acid per acre per annum, and yet the greatest part of this phosphoric acid, namely, 3.68 lb., is assimilated by the Pine-needles and twigs that fall to the ground, and there decay, restoring to the soil by their decomposition those elements which they had originally taken from it. The hard-wood of the Pine tree absorbs scarcely more than 1 lb. of phosphoric acid per acre per annum. It has been found, however, that the quantity of phosphoric acid present in the soil has a considerable influence upon the vigour and healthy growth of Pine-trees.

In some investigations by Prof. Schultz at Bavaria, the results showed that the best class of soils for the growth of Pine-trees contained 0.569 per thousand of phosphoric acid. In the second class of soils adapted for the culture of Pines, 0.501 per thousand of this element was found. In the third class, 0.388; in the fourth class, 0.299; and in the fifth class, or most inferior description of soil adapted to the growth of Pines, only 0.236 per thousand of phosphoric acid was found in the mould.

Spruce Pines and Oaks abstract from the soil by their growth more phosphoric acid than do Pine-trees, in fact, almost twice as much; but even this is infinitely less than most cultivated plants of the garden require for their perfect development. This is explained by the fact, that forest-trees possess exceedingly long roots, which descend deeply into the earth, and thus are enabled to bring up phosphoric acid and other mineral matters according to their requirements. This sub-soil source of plant-food is not got-at-able by most plants, and helps to explain the enrichment of surface soils under forest-trees. The falling leaves and vegetable debris go to make up the humus of forest-moulds,



FIG. 23.—IRIS BAKERIANA.

(See Report of Royal Horticultural Society, p. 114, col. 3.)

summer 6 inches long. The lobing is not so deep, and the leaf is thicker in substance; the midrib and veins, as well as the young wood, are of a darker, redder colour. The fruit is rounded, oblong, and resembles that of the North American *C. punctata*, being frequently an inch across, of a dark lustrous red, and marked with scattered dots; the calyx-lobes are short and cuspidate. It has been known as *C. turcica*, Messrs. Veitch having introduced it from Tartary. They obtained a First-class Certificate for it at one of the Royal Horticultural Society's meetings in October, 1886; it had, however, been in cultivation long previously. There are old trees, 15 feet high, in the Kew Arboretum. Several other names under which this tree has been distributed are given above.

stiff, sharp spine. When grown in the open it makes a handsome bush of close yet graceful habit. It will grow 8 feet high there, but much higher on a wall.

Var. latifolia is now much grown. It is of stronger and more open habit, and the fruits are orange-coloured.

C. sanguinea.—A Siberian species, figured as *C. spinosissima* in Loddiges' *Botanical Cabinet*, t. 1100. It has sharp, moderately stout spines, $1\frac{1}{2}$ inch long, and dark-coloured winter-buds. The leaf is broadly ovate in the main, but deeply lobed and serrated, and from 2 to 3 inches long. The flowers, nearly 1 inch across, are white, with a faint flush of pink. The fruit is about the size and shape of the common haw, but ripens late.

C. sinica (syn. *C. maroccana*).—A handsome

It may be said that phosphoric acid is one of the fertilising elements in manures that tend most strongly to accumulate in the seeds of plants. It passes rapidly from the leaves and stems into or towards the fruit, through all the stages of growth, from first to last. *J. J. Willis, Harpenden.*

EDINBURGH BOTANIC GARDEN NOTES.

LELIA SUPERBIENS.—This strong-growing Guatemalan species is at the present time flowering in the Orchid-house. It has a great resemblance to *Schomburgkias* in habit, and in the production of the long scape with the flowers arranged at the apex. The spindle-shaped pseudo-bulbs are about 18 inches in length, and the plant in these gardens has only eleven flowers, but from ten to twenty are said to be borne by the plant in a state of Nature. The flowers are coloured rosy-mauve, with a lip of purple and gold. It is said to have been collected where hoar-frosts prevail. A good heat is required to properly cultivate this plant during its period of growth. The Royal Horticultural Society are credited with having first introduced this species in 1842.

PLEUROTALLIS SCAPULA.

Although ranking among Orchid curiosities, yet this plant is well worthy of a place in our collections, by reason of its free-flowering. The stems are erect, and bear a single leaf, from the base of which arises a raceme of six to ten flowers. The dorsal sepal is 2 inches or more in length, and narrowed to a pointed tail, and the sepals and petals possess this spidery appearance. They are greenish-yellow in colour. The figure in the *Botanical Magazine*, t. 7431, was drawn from a specimen received from Mr. Moore, of Glasevick, who grows the plant in a cool-house. The Edinburgh plant succeeds in the Cattleya-house, and flowers from every growth; one growth, indeed, throwing up a second spike.

MACKAYA BELLA.

This lovely Cape shrub is always admired when well flowered, but unfortunately it is not often met with in fine condition, which is probably the reason that gardeners consider it to be a shy bloomer. A plant has been in flower in the succulent-house for the past month, where it occupies a position in the central bed among Agaves and other similar plants. Planted in the early part of 1896 from a 6-inch pot, the stems grew rapidly until they reached the height of about 7 feet. Several of these were cut out owing to lack of space, three being left. The side branches from these stems form a diameter of 4 feet. The foliage produced is large, and of a dark green colour, and from every small branch a pendulous raceme springs, terminating its growth, and some of the strongest of these inflorescences carry from eighteen to twenty large pale lilac-coloured campanulate flowers. Upon one of these side branches about fifty racemes were counted, and the show made by such profuse flowering may be well imagined. Although of easy cultivation in a warm greenhouse, the following points must be attended to flower it well, viz., to promote a vigorous well-ripened growth during summer (here it enjoys all the sun possible to give it), whilst growing a fair amount of water is afforded, the quantity being reduced towards the autumn, and during winter almost entirely withheld. No water was afforded the plant growing here, for about six weeks, and still the foliage remains fresh. The plant is rather variable in the colour of its flowers. *R. L. H.*

METHODS OF PROPAGATION.

(Continued from p. 36.)

BY MEANS OF ROOTS.—I have already given some methods of plant propagation by means of the stems and leaves. I will now descend into the soil, and afford my readers the chief points of propagation by the roots, specifying some of the subjects increased in this manner in nurseries. It may be taken as a general aphorism that all trees and shrubs that throw

up suckers or shoots from the roots freely can be increased by means of cuttings of the roots; and in some nurseries the Paradise Apple, Quince, and other fruit-stocks are so propagated, though the methods already given are, in my estimation, preferable, if not better. The theory of root-propagation is that when the root-cuttings of certain plants are bedded in soil, the wound-part soon begins to callus or form granular cells, from which adventitious roots at the base are developed, while those at the upper part form adventitious buds, which eventually lengthen into shoots.

It remains only for the propagator to furnish the root-fragments with a suitable location, and to see that the conditions of moisture and temperature are constant and suitable, to assure success.

As a typical subject for this sort of treatment, I will first take the Dwarf Almond—*Amygdalus nana*—the pretty pink flowers of which are welcomed as one of the harbinger of spring. On lifting a strong clump of this, it will be found to consist of a mass of inter-lacing roots. Now, if in the early autumn, the stoutest of these are selected, divided into pieces about 6 inches long, and bedded in some generous soil, with which some sharp sand has been incorporated, the cuttings will grow the following summer, and next season they will have become strong enough to flower.

Quite opposite to this is *Desmodium penduliflorum*, the roots of which descend straight into the soil to a considerable depth, which being got up, and cut into lengths, will make plants in time. Another member of the same natural order—*Hedysarum multijugum*—is a fine novelty, and is increased by the same method.

Among plants recently introduced, none excels some of the Japanese *Fatsias* (*Aralias*) in handsome foliage. Of these, the well-known *A. Sieboldii*, though noble in appearance when it attains a fair size, is by no means the most handsome, though its being an evergreen is an advantage. The varieties I have in my mind are deciduous in character, with similar 5-lobed leaves, but too tender I fear for our sometimes severe winters. I allude to *A. Maximowiczii*, and *papyrifera*, and others introduced much earlier, and of a totally different character of foliage. *A. japonica* and *A. spinosa* [*This is hardy*, Ed.], the exceedingly handsome bipinnate foliage of which, gives them a distinct and very attractive character, when planted singly or in small clumps on the lawn or in the shrubberies. Another plant put upon the market in recent years by a French firm, and named *Dimorphanthus mandchouricus*, may also be increased by root-cuttings. I confess I am not botanist enough to distinguish between this and the *Aralia japonica*, introduced late in the eighteenth century, but I have not seen the inflorescence of *Dimorphanthus*. I can say this in its favor, however, that treated as a subtropical plant and associated with *Musa Ensete* and *Yuccas*, or *Cannas*, it has a unique effect in the ornamental garden. The *Ailanthus* (Tree of Heaven), and the noble *Paulownia*, can also be propagated by cuttings of their roots. *Experiencia.*

(To be continued.)

THE CHRYSANTHEMUM TRADE.

In the Chrysanthemum nurseries cutting-striking is in full swing; and the extent to which cuttings are sent by post is something extraordinary. Cuttings are offered at a cheaper rate than cutting plants, and many growers, preferring to have the newer varieties early, order them as cuttings, taking the chance of striking them. In order to supply cuttings, plants are grown in the open air all the summer and autumn, and then, as the Christmas season is approached, these are lifted, taken into a warm house, and planted in beds on the centre and sides, and covered with soil to the extent they were when growing in the open. Cuttings from such plants are short, stocky, and hard, and are preferred before those taken from plants which have bloomed in pots, and been grown strongly by the application of fertilisers.

The postal facilities granted in late years have given a great impetus to the cutting trade; the

cuttings, when taken off, are tied up with some moist moss about their base, placed in small, though light and strong wooden boxes, and forwarded long distances in perfect safety. Mr. H. J. Jones, of Lewisham, who has largely developed the cutting trade, states that it is the newer varieties in particular which are in brisk demand, and but comparatively few of the older favourites. So many new varieties are now sent out, that it is necessary, on the part of any grower for sale, to order the whole of them, and take his chance of having 10 per cent. or less of really good varieties. Then, as some of the newer varieties require three and four years' culture before they are developed sufficiently to be seen at their best, a number of inferior sets, some of which are to be found in most new sows, have to be grown during the time, and be thrown away at last.

The striking of cuttings have been going on for some time; and is now in the full flow of activity. Already nicely-rooted plants are in small 60-pots for early orders. To succeed these can be seen hundreds of little shallow wooden boxes, which contain three dozen or so of cuttings, some well-rooted; others beginning to put forth root-fibres—many only just inserted. In a temperature of 50° or so, such cuttings soon make root, and then comes the process of potting off ready for the spring trade. As the demand for new varieties indicates the continued popularity of the flower, then it can be safely asserted that it is as widely grown as ever. Chrysanthemum societies are constantly being started in suitable localities, and it is found that exhibitions of Chrysanthemums are among the most successful financially. Autumn flowers, and especially the Chrysanthemum, appear to hit the popular taste much more than those which appear in spring, perhaps it is because human nature holds most closely to what is passing away, as autumn changes to winter, rather than to what heralds the approach of spring. *R. D.*

THE ROSARY.

THE VAGARIES OF THE ROSE.

Is not this a very ungallant term to apply to our beautiful queen? I think not, for beauty is always allowed to be capricious and accountable to no one for her caprices, which are oftentimes quite inexplicable, and for which people never think of calling her to account. And has not an old Latin poet said that she was "*semper mutabile*?" and one of our English poets has imputed him by calling her "uncertain, coy, and hard to please," so that I think we are not to be surprised if we find even the queen of flowers departing from the normal rules that govern her doings and for which we can find no adequate reason. These are especially of two kinds, variations in habit of growth and variations in the colour of the flowers. The former are generally called climbing varieties, and the Roses which have made this change, although strictly speaking they are not climbing, for they are not like those plants which in one way or another laid hold of support, but are simply rampant growths which have originated we know not how; the latter are changes in colour which take place perhaps oftener than we imagine, although they may pass unnoticed. Some examples of this climbing habit are very remarkable: take, for instance, *Devoniensis*, a small and moderate grower, which was raised by Mr. Foster in 1838, and was in many places, on account of its constitution, difficult to keep. But twenty years afterwards, in 1858, a plant in the garden of Mr. Pavit of Bath, sent up a strong and vigorous shoot, and so attracted his attention, that he determined to bud from it; he found it to be fixed—that is, that the plants budded from this shoot partook of its character, and it is an unusual thing to find shoots now from 15 to 20 feet, while at the same time flowers are produced in greater abundances [?], and maintain the character of those on the parent plant. It was distributed by Pavit, and I have never found any plants going back to their original form; the same variety has sported in like manner in two or three other places, but none of these have been

equal to the original one. People are sometimes complaining of their not being as vigorous as represented, while others deny its floriferous character, but I have never known these complaints to be made in the case of Mr. Pavit's strain. Other Roses, both amongst the Teas and hybrid perpetuals, have started off on the same track. Some years ago Messrs. Keynes, Williams & Co. brought out a climbing Niphetos, also in its normal condition not a vigorous grower, and described in the National Rose Society's Catalogue as tender, which many cultivators have found it; but I have seen shoots of the climbing variety 20 feet long, and stout and hardy, nor does the type seem in any other place to have made a departure from its normal condition. There are other Roses of which we have climbing varieties. There is, for instance, a charming Charles Lefevre, a climbing Capt. Christy, a climbing Jules Margottin; but it is

or, as we used to call it, H.P. La France, has sported off into the nearly white Augustine Guinoisseau and the deeper-coloured Duchess of Albany; that old and favourite Tea, Souvenir d'un Ami, has in the same manner sported off to Souvenir de S.A. Prince. Thus Comtesse d'Oxford has given us a curiously striped Pride of Reigate; while Messrs. Harkness & Son obtained from Heinrich Schultheiss, a very beautiful striped Ross, which they have called Merrie England. Then Baroness Rothschild has also been sported, and has given us Mabel Morrison, nearly white. Merveille de Lyon, pure white; but some doubt has existed with regard to this flower, some contending that it is not a sport, but a seedling, and in proof of this they point to the very different shape and form of the flower; it may, perhaps, be the one exception which is said to prove a rule, for if it be a sport it is the only instance of which I am aware in which the

one they will go occasionally back to the original, and also that from La France itself sports may often be cut; therefore great care ought to be taken before putting any of them into commerce. I do not pretend to know what is the cause of this sporting, but it has given us many beautiful varieties of Roses.

Recently a very curious vagary has been noticed in the Rose-grounds of Messrs. Frank Cant & Co. of Colchester: all Rose-growers know and admire the beautiful yellow Harrisoni, and have lamented it is only what is called a summer-flowering kind; but in a large batch of them Mr. Cant found three or four plants that bloomed very freely in the autumn—the buds from these and found that the plants retained the same character, so that we shall have, it is to be hoped, an autumn flower sport of this beautiful Rose.

Beside being careful about not distributing any of the sports until they are permanently fixed, growers ought to avoid the error of sending out as seedlings what are only sports; this has been done, and I cannot think that there is the same credit to be attached to the fixing of a sport as there is to that of raising a seedling—one is merely a freak of nature [a more or less complete reversion to some earlier form. Ed.], the other may be the result of careful and scientific manipulations. Anything that adds to the beautiful varieties of Roses which we now possess, may be hailed with pleasure. *Wild Rose.*

THE CULTIVATION OF DAFFODILS IN POTS.

PERHAPS the most valuable genus of flowering bulbs for cultivation in pots for winter and spring-flowering is the Narcissus. Despite the ease with which they can be grown, the beauty of the blooms, and in some cases their agreeable odour, little has been done with them in gardens beyond planting them in borders or beds. However, the tide is turning in their favour, and Daffodils are now being forced into bloom for market purposes in almost as great number as Tulips and Hyacinths. A peculiar fact in connection with the Narcissus family is, that while the so-called Polyanthus Narcissus (N. Tazetta varieties) were for years strongly recommended for forcing, the Trumpet and other sections remained unnoticed; and for actual forcing there is little doubt that the "bunch-flowered" section of Narcissus is one of the least suited for this kind of work. Still, giant bulbs were produced year by year, and it was considered the right thing to do a dozen years ago to order a supply of these with the other bulbs. Suddenly, however, it became known that other species would force much better, and afford generally better results. Ten years ago it was considered early in the season to get flowers of forced Daffodils in February, whilst at the present time the last week of the year sees plenty of flowers of Narcissus.

The points to be noted in securing early flowers is that the right species or varieties be chosen, as early as they come over from Holland, and that they be potted for the purpose. These points observed, the chance of failure is small. With plenty of roots made while the bulbs are in the open air in a bed of coal-ashes or tan, the flower-scape is more likely to prove early than is the case with late-potted bulbs. There is too little attention given by gardeners to this important feature of early flowering, and bulbs are not planted nearly so soon as they should be, but instead they are rushed into heat in part unfurnished with roots, with results that are never very satisfactory. The soil for Narcissus is not of much consequence, so long as it is of a fairly sandy nature and not wet when used; and old potting-shed materials, if duly sifted, and mixed with a small quantity of fresh loam, fulfil all the requirements of the plants. For some years I have employed the mould taken from disused Cucumber beds, with fairly good results. One of the most fortunate things in connection with the forcing of the Narcissus, is that the commoner and cheaper varieties are the best for the purpose. Take for example the double yellow-flowered pseudo-Narcissus, which is to be found in so many of the cottage-gardens in England and Wales, and which, as a double-flowered variety is still the best in colour and shape. Then there is the now well-known Tealy Daffodil, a bright yellow, with a sturdy trumpet, which forces readily; while closely following it comes the more expensive though larger variety known as Ard Rich (Irish King), the larger flowers of which are very handsome. Among the paler forms, N. p. n. Prince pias



FIG. 29.—IRIS HYSTRIX.

(See Report of the Royal Horticultural Society, p. 114, col. 3.)

a somewhat curious thing that there are no climbing varieties of such strong and sturdy growers as Paul Neyron and Etienne Levet. In all the cases that I have noticed there is no change in the character of the blooms, and the whole proceeding seems to me very inexplicable; it cannot be the stock on which these climbing specimens have been budded, for myriads of the same Rose have been budded on all kinds of stocks—Manetti, seedling Briar, Briar cutting, Polyantha, &c., without in the least causing them to start off on their own account.

The subject of sports, so far as colour is concerned, is also a difficult one to explain. Some kinds, both of Teas and hybrids, apparently have been more inclined to do this than others; Catherine Mermet, for example, amongst the Teas. This has sported off to the beautiful white Bride, and the pink-flowered Waban, both of American origin; while the latest sport obtained by Mr. Brown, of Reigate, Muriel Grahano, shows the possibility of still further departures in this direction. So, again, the hybrid Tea,

shape and build of the flower have been altered—when caught at its best it is a most beautiful Rose, but the centre is somewhat faulty, and it is very apt to show the eye. These sports in colour are not always permanent, and are a great disappointment to the Rose growers. A very notable example of this is Sir Rowland Hill, a very beautiful maroon or deep claret sport from Charles Lefevre: this, when exhibited by Messrs. Mack & Son at the exhibition of the National Rose Society at Edinburgh, some years ago, obtained the Society's Gold Medal, though I believe it was exhibited as a seedling, which certainly it is not. It is a flower of most attractive colour, but unfortunately has a great propensity to "hark back;" it is seldom seen in the exhibition stands, and I have been told by those who grow it in quantity that perhaps in sixty or seventy plants you do not get more than one or two which are true to character—it therefore becomes valueless as a sport. It is the same sometimes with the sports from La France: those who grow it in quantity have told

charming flower, easily grown, and almost indispensable in early work. The single Van Lioo is likewise a good yellow; while Golden Spur, a huge golden flower, is finer still. Some of these single forms have delicate perianth segments, requiring care in forcing them not to place the bulbs in a temperature that is too high, as this, with much overhead moisture, quickly spoils the blooms. Countess of Annesley is a faulty one in this respect, because the segments frequently lie upon the trumpet, and prevent the escape of moisture. Moisture at the roots is desirable, but as soon as the above bursts overhead syringing ought to be discontinued, and the plants removed to a house with a temperature of about 50°. The same remark applies to many of the *N.* incomparabilis group, and, indeed, is generally applicable to those with rather thin perianth segments. Among the white forms, *N. poeticus*, and *N. p. ornatus* require to be brought along steadily—indeed, a temperature of 45° is the best to start with; and in the same degree of heat quite a host of other species and varieties may be grown to perfection. *J.*

THE WEEK'S WORK.

THE FLOWER GARDEN.

By CHARLES HERBIN, Gardener, Dropmore, Maidenhead.

Planting and Pruning Climbers.—The following plants may still be planted:—*Chimonanthus fragrans*, a desirable subject for a sunny wall, whose period of flowering will soon be past for the season, when the necessary pruning should be performed. As it flowers on the young growths of the preceding year, the shoots which have flowered should be pruned to within two buds of the shoots from which they arise. If the allotted space be not filled, the leading growths should be tipped, and then secured to the wall. Free growth should be encouraged, which is best done by affording the roots a top-dressing of new soil and manure. *Jasminum nudiflorum*, a plant that is now in flower, should have weak shoots thinned out, and others cut back as soon as it has passed out of bloom. The following subjects are adapted for planting against walls with a southern aspect:—*Choisya ternata*, an evergreen shrub with fragrant white flowers; it is a suitable shrub for planting throughout the south of England and similar districts. In some parts of Devon and Cornwall it flourishes as a bush without the protection of a wall. *Magnolia grandiflora*, evergreen; *M. conspicua*, and its varieties, *Soulangiana* and *S. nigra*, are excellent for planting against high walls, being plants of vigorous growth. *M. Campbelli* should only be planted in gardens in the south and south-western maritime counties. It has flowers of pale rose inside, and outside crimson. *M. glauca* is hardy anywhere—the flowers are white and fragrant. *Stantonia hexaphylla*, a small flowered, very sweetly-scented climber with dark green foliage; *Pterospermum Jolibre*, a plant of shrubby growth, with fragrant white flowers; *Ceanothus aureus*, *Passiflora cerulea*, and *F. Constance Elliott* may all be planted in sheltered situations against a south or west wall. Among hardy climbers, the Clematis ranks deservedly high, and may be planted in great variety. One of the most useful is the old *C. Jackmani*, a very effective purple-flowered variety, blooming from mid-summer to late autumn. Where established plants of this variety are desired to cover a large space, the strongest growths of last year should only be shortened slightly, and the weaker ones cut back to one or two buds; but if they should be cut back when a low flowering growth for covering arches or beds is required. Varieties of the *C. montana* type, which flower from ripened shoots of the previous year's growth, require but little pruning at this season, the removal of dead wood being all that is necessary, the required pruning being carried out when flowering is over. When planting climbers, the Sweet Jasmins—*Jasminum officinale* and *J. o. grandiflorum*—should not be forgotten, the latter with larger flowers and stronger growth. In pruning Jasmin, the young shoots of the preceding season require to be cut back almost to the base, the leader being allowed to extend if desired. *Jasminum revolutum*, a yellow-flowering species of strong growth, should be planted in a sunny and sheltered situation, where there is space for free development, and not pruned so closely as *J. officinale*, but some of the strong young growths tied or nailed in at nearly their full length. For covering a north wall, *Crataegus pyracantha* is an excellent subject, flowering and setting its berries in profusion, which remain throughout the winter. Where a climber

with large and important-looking foliage is desired, and there is ample space, *Aristolochia siphia* may be planted in a good wide border. The well-known *Wistaria sinensis*, flowering in early spring, requires a considerable amount of wall or roof space for extension so as to show off the beauty of its flowering racemes. *Ampelopsis Veitchii* and the common Virginian creeper should be planted for the rich colour of the autumn leaves. *Honeysuckles*, *Bignonia radicans*, *Escallonia macrantha*, *Forsythia suspensa*, and *F. viridissima*, and *Kerria japonica* are other subjects well fitted for covering walls or fences. The planting of Roses, both as climbers and in the open, should now be completed as soon as possible, unless they are growing in pots, when planting may be carried out later. Fortune's Yellow is an old variety adapted for planting against east or north walls. Climbing Roses trained to walls, fences, &c. should be pruned forthwith. Tie or nail in strong young growths at nearly their full length, cutting back all weak growths to one or two eyes.

Dahlia's may now be put in a heat of 55° to 60°, for the production of shoots fit for making cuttings. If the roots are stood on the floor of ainery, and moistened with the syringe, no soil covering is necessary. Slip off the shoots with a heel then 2 inches long, and insert singly in sandy soil filled with light sandy soil, and place in propagating-pit or frame in warmth of 65° to 70°, guarding against excessive moisture. Old stools of varieties of which no cuttings are wanted should be kept cool.

THE HARDY FRUIT GARDEN.

By H. W. WARD, Rayleigh, Essex.

Pruning and Training of Wall Trees one year Planted.—Upon the manner in which this is performed depends almost entirely the building up of productive and symmetrical trees. In fact, these remarks apply to fruit trees and bushes generally, but more particularly to wall trees. Up to within the last quarter of a century it was the custom to cut back the shoots of young trees to within two or three buds of their bases at pruning-time, with the object of laying the foundation for a well-furnished tree, with the natural result that twelve months after planting the trees were little, if anything, larger or better than they were when received from the nursery. But this rather faulty practice has dropped into disuse, and "extension" taken its place, i.e., the formation of large fruit-bearing trees in as short a space of time as possible. To Mr. J. Simpson, of Wortley, is due the credit of having initiated the "extension" system, as well known as in the open air; and during the years which have elapsed since the early seventies this method has been ventilated in the pages of this and other journals. As the old methods still maintain their hold on the craft, I will briefly describe the new. The first spring after planting young trees on walls or in forcing-houses, and as soon as the sap begins to rise, the unpruned shoots are bent towards the ground, and secured in that position to the wall or trellis in the ordinary way, the bend starting from the point whence the first of the young growths should proceed—say, 3 or 4 inches from the base. The fact that the bending of the shoots gives to the flow of the sap, causes a number of wood-buds to push from each shoot, which serve to form a good-sized fan-shaped tree the first year. As a matter of course, as soon as the buds nearest the base of each shoot so treated have pushed into growth, the nails should be drawn, or the ties cut, as the case may be, and the shoots (main-shoots) spread out on the wall or trellis fan-wise, and loosely secured thereto, the young shoots being trained at proper distances apart over the intervening spaces, a judicious course of disbudding and pinching off the after-growths being followed out during the summer and early autumn months, with the object of developing the wood and fruit-buds, and inducing a balanced growth.

Peach and Nectarine Trees should be pruned forthwith. They only require the shoots made last year to be thinned out a little, retaining, of course, only those which are well furnished with fruit-buds, cutting back old ones, i.e., shoots made in 1895, to their bases, and shortening back weak shoots to a wood-bud situated just beyond the uppermost fruit-bud, or to three buds located together, the middle one of which is a wood-bud. Any unduly strong young shoots should be removed entirely where they can be dispensed with. The shoots which should radiate from the upper part of the stem should be trained at an equal angle; and at a not smaller distance than from 3 to 4 inches apart, which will allow of the

shoots of the current year being laid in between them by means of short lengths of the shoots of Privet, Hazel, &c. Where very strong young shoots cannot well be dispensed with, they should be bent towards the ground, and treated on the extension system.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower, Burford, Dorset.

Airides.—Some few species of *Airides* bloom in August and September, but most of them flower in the summer, yet the treatment of the plants as a whole is almost identical throughout the year. In a week or two it will be necessary to repot or top dress such as require more space or fresh material. Whilst the plants are in the potting-shed the minute brown scale often observed on the leaves should be wiped off with a sponge dipped in soapuds; even if no scale be visible, the sponging will brighten up the leaves of the plant.

Angraecum sesquipedale, which may have gone out of bloom, should be sponged in the same manner, to remove scale and a fluffy sort of mealy-bug which sometimes infests the plant and may be found on portions of the old foliage, close to the stem. Well-grown plants present a beautiful glaucous appearance, and unless absolutely necessary, sponging of the leaves should not be resorted to.

Phalaenopsis.—At the present time several species are in bloom, viz. *P. amabilis*, *P. intermedia*, *Portia*, and *leucorhoda*, and care should be taken of the small or weakly imported plants that do not flower excessively. It is not always advisable to pinch out the flower spikes which appear, for fear that others may start later on when the plants commence to grow, and if the plant is healthy, the spike may develop, and then be cut off as soon as the flowers open. *Phalaenopsis* should be afforded water carefully at this season, it being sufficient to sprinkle the sphagnum-moss lightly and the sides of the basket, and never let water lodge in the centre of the growths, for fear of the leaves becoming spotted.

Special Houses.—If a house can be set apart for such species of Orchids which are found to succeed under a similar kind of treatment, it is conducive to their well-being, as then their culture becomes easier, and results are better than when Orchids of varied requirements are mixed together. This is particularly the case with species from Mexico, viz., *Mormodes buccinatorum*, *M. parlinum*, *M. p. uicolicor*, *M. luxatum*, *M. l. eburneum*, *Epidendrum nemorale*, *E. atropurpureum* (macrochilum), *E. alatum*, *Cyrtopodium St. Legerianum*, *C. Andersonii*, *C. punctatum*, *Catleya Skinneri* and its varieties, *C. speciosissima*, *Schomburgkii*, *Arrophyllum giganteum*, *A. spicatum*, *Ocoteoglossum citreolum*, *Laelia anceps*, *L. albida*, *L. autumnalis*, *L. Guianensis*, *L. Martiana*, and *L. Leontina* (rubescens). The varieties of *Laelia anceps* are too numerous to mention here, but such distinct forms as *Barkeriana*, *Chamberlainianum*, *Schrodere*, *Leconteum*, *Veitchianum*, *Percivaliana*, *rosea*, *Hilli*, *Dawsoni*, *Sanderiana*, and *Stella* were all open at one time at Burford recently, and formed an interesting group. The majority of these Mexican *Laelia's* have now finished blooming, and root-growth will soon begin; and before this occurs is the proper time to do any fresh potting or top-dressing that may be needed. Well-rooted plants and those with sufficient pot-room need not be disturbed, unless the compost is stale. In surfacing remove the old moss from the roots before affording fresh materials. When re-potting established plants, the roots need not to be much disturbed, as to do that might cause a check, and the plants might not bloom again for a long time. Shallow pans, or baskets of teak are best, the plants being raised above the rim, and the materials firmly placed round the roots. These may consist of fibrous peat, a small quantity of sphagnum-moss, and a few large stones to facilitate the passage of water. When re-potted, afford them a light airy place, and enough water to prevent shrivelling, any more than this causing the older roots to decay quickly. Till new growths are seen, and the roots have taken hold of the potting-stuff, the temperature at night should be kept at 55°, and by day with sun-heat 10° to 15° higher, with plenty of ventilation. In dull or continued rainy weather, the air in the house should not be humid. *Laelia flava* and *L. harpophylla*, now sending up flower-spikes, will need but little water. *Brassia* *Catleya* (*Laelia*) *Lindleyana*, now showing for bloom, succeeds in baskets hung up to the roots. The amount of water it receives should be gradually reduced when its flowers are fully expanded, and they will then keep fresh for a long time.

PLANTS UNDER GLASS.

By G. H. MAYCOCK, Gardener, Luton Ho., Luton.

Grevillea robusta.—Old plants may be cut down to within 6 inches of the ground, so that they may make nice plants for indoor decoration by the end of the season. When the plants have broken, select the best three growths, and rub off the remainder. Seeds of this plant may be sown at the present date on a brisk bottom-heat, the seedlings being pricked off when large enough to handle, still keeping them in heat for a time.

Ferns.—No time should be lost after this date in dividing where necessary, and re-potting the plants of the various species and varieties. The method of increasing the more popular *Adiantums* and *Pteris* is by means of spores. Select fronds whose spores are of a dark brown colour, these being very minute and plentiful. Cut a few rows between the joints of peat that has sterilised by heat, and then buried in a sack in some part of the kitchen garden to moisten. Having mixed a quantity of this peat with sharp sand, proceed to fill well-drained pans or broad pots, pressing it firmly, and having watered each panful, stand them aside to drain, and when moderately dry upon the surface, scatter the spore thinly, cover with a sheet of glass, and put over all some moss. The best method of affording water when the soil gets dry is to place it on an inverted pot in a vessel of warm water, the pan being sunk about 1 inch, and allow it to remain till it is considered that the soil has become sufficiently moist. The spore-pans should remain in the propagating-house till the seedlings are large enough to be pricked off into small p.p.s. In potting the plants, the pots should be clean, and well drained. A suitable potting soil is one that consists of one half fibry loam, and the other half peat, with a liberal quantity of sharps and leaf-soil. Ferns from spores sown last year, which are now in 3-inch pots, may be repotted into 5-inch ones, and so on in proportion, a few of the oldest plants being discarded, so as to make space for the young generations. Ferns, young and old, require firm potting, but the soil must not be made hard with a rammer. *Davallias* in variety may be increased by cutting the rhizomes into good long pieces, and pegging these down firmly on the soil, or on the dead stems of Tree-Ferns. These plants may be placed at the cooler end of the fernery. *Ephiphyt* species, namely, *Platycaerum*, do well if tied or nailed on to blocks of half-dressed wood, such as that of the Apple, Crab, or Oak, previously well covered with peat and sphagnum-moss. I do not recommend the use of cork, it being, in my opinion, too dry for Ferns during the summer. *Gleichenias* may be increased in the same manner, or by dividing old plants into two or three pieces. *Gleichenias* thrive better in pans than pots; and in the potting soil, only one part loam and more leaf-mould and sand should be made use of. When the potting is finished, the temperature of the house should be raised to 55° by night, 60° by day, and the air kept rather moister.

Catalinums.—A part of the stock of these tubers may now be potted in pots just large enough to hold them, shifting them afterwards according to the size required. Place them in the stove, or pit having a similar degree of warmth, and when the roots have penetrated the new soil, syringe them daily. Some gardeners shade the plants during the hottest part of the day, others do not.

Gloxinias.—Tubers for flowering early should be potted up forthwith, in a mixture of one-half leaf-mould and one-half peat, and plenty of sharp sand. Apply water sparingly at the first, and keep them in a moist atmosphere, not syringing them overhead, but well damping the walls and staging frequently. *Gloxinias* take abundance of water during the growing season, and great care should always be taken in checking thrips. If they are wanted in flower for a long season, successive batches should be potted up at intervals of a fortnight or thereabouts, relying on seedlings raised from seed sown in January.

FRUITS UNDER GLASS.

By F. HARRIS, Gardener, Estover Castle, Ledbury.

Pines.—Fruiting plants should now be afforded rather higher temperature, viz., 70° by night to 80° to 85° by day with sunbath, and a bottom-heat of 85° to 90°. To encourage the plants to develop fruit, maintain a moist air about the plants by damping between the pots, walls, &c., twice daily, and keeping the evaporating-pans filled with mild liquid-mannure; a sprinkling of some safe and suitable artificial manure should be occasionally afforded, which should be washed in with clear water at a temperature of 95°.

The fruits should be supported in an erect position by wooden stakes and broad bast ties.

Successions.—Plants that were started to grow about the New Year, and now exhibiting the embryo fruit, should be kept fairly moist, but not allowing the soil to become very wet, or the flowers may not all set, the result of which is misshapen fruit. Should any of this batch not yet have thrown up a flower-spike, the soil must be kept dryer until they do so. To keep it moist is to promote leaf-growth only. Keep the temperature at the above figures, and as the days lengthen and the sun gains power, increase the amount of ventilation, carefully avoiding sudden changes, as a check now will influence the proper development of the fruits later on.

Potting Successions.—If the soil was prepared as recommended in a earlier Calendar, potting may proceed forthwith, choosing the best and strongest plants, and those which have filled their pots with roots. Such plants may go into fruiting-pots of 10 or 12-inch diameter, according to the size of the plants. Before potting a plant, sprinkle a handful of crushed bones and a small quantity of soot over the cracks, and having soaked the balls, if dry, in warm water, allow them to drain, then gently disengage the points of the roots, strip off a few of the lower leaves, and place the top of the ball a little lower than before, and ram the soil firmly all round it. After the plants are potted, they should be plunged in a bottom-heat kept steadily at 85°, the topheat being 60° to 65°. Withhold water from them for a few days, but keep a growing atmosphere by frequent damping of the bed, walls, floors, &c., and ventilate sparingly till growth begins, then give air more freely, or the plants will get weak and spindly. A very light shading may be used in the middle of the day when the weather is bright. A slight sprinkling overhead at closing time will be of great assistance at this stage; any available suckers may be potted up, and as a means of obtaining suckers of varieties that do not produce them freely, some of the stools may be trimmed up and plunged in a brisk bottom-heat.

THE KITCHEN GARDEN.

By W. POPE, Gardener, Highclere Castle, Newbury.

Limning the Soil in old Kitchen Gardens.—Usually the soil of a garden which has existed for a great number of years contains a great deal of undecayed vegetable matter supplied by repeated dressings of manure, the roots of crops left in the soil, &c., which in its inert state is productive of many evils, and no better corrective exists than quick-lime. The present season, and other times when the land is being dugged or has been dug, is a good time to apply it with the manure, or as a top-dressing. Its action is to render the vegetable matter more suitable to serve as the food of plants, to aerate the soil, and destroy, by its caustic action, insects, their eggs and pupae. The rate at which lime fresh from the kiln may be applied is from 30 cwt. on light gravelly soils to 2 tons for clay land per acre. It should be spread evenly, and used whilst fresh. Lime from the purifying chests of the gas-works is often recommended as a dressing for foul land, but it should be afforded in the autumn, and left on the surface for a few weeks before being dug-in; the same rule applying to dressings of chalk, which should be put on in time to be well pulverised by the elements before seed sowing or planting.

Renovating the Paths and Edgings.—Where Box is used as an edging plant, the present is the proper time to carry out any mending or relaying that appears to be required. When relaying, the old edgings should be entirely taken up in the part to be operated upon, and a quarter in the line of the edging deeply dug and freshened up by some soil being added from the adjacent grounds or borders; and when dry it should be well trodden, levelled, and beaten to the proper level, i.e., a point level with the lower part of the walk, supposing that to be of its proper level. Then pull the old Box plants into pieces, 3 to 4 inches long, trim the tops and roots, and relay it rather thinly, and very evenly, making it very firm about the roots, against the vertical side of a trench cut with a spade, taking care in making the latter to preserve the true width of the path. As the relaying obliges the garden to be changed up to the gravel into heaps and ridges on the walks operated upon, and there is obviously much soil brought on to them, re-gravelling is always necessary more or less, and it is as well to get this sort of work done before the more busy season comes on. A walk may have the entire coat of old gravel wheeled away, and this is always advisable if it be old, and consequently

much mixed with mould; or a layer of the old materials, 1 inch thick, may be removed; or where the gravel is in fairly good condition, it may be turned with digging-forks, and made fresh-looking with a sprinkling of new gravel. This holds good for pit-gravel, sea-gravel, and shingle-made walks. If a walk does not dry quickly after rain, it is badly drained, or not at all; but as the re-making of such walks is a long job, it should be deferred to October, November, or December. The best kind of edging is made of stone, or cement, or similar hard materials, and then with "Weed Killer" a walk can be kept in good order for little expense.

Parsnips.—When the soil gets sufficiently dry to bear being trodden upon, a few rows of Parsnips may be got in, in drills less than 2 inches deep, drawn at 1½ foot apart, the seeds being dropped in pinches of three to four ½ foot apart for large, and 1 foot for medium varieties. By sowing in this manner thinning is more expeditiously performed. If very fine roots are required for any purpose, holes should be made 20 inches deep, and 18 inches apart, with a cross-bar or iron-shod two-handed dibber, filling these with finely-sifted, rather light soil, such as old potting-soil, made firm, and a few seeds pressed on to the top of each, taking care to thin to a single plant. Do not sow seeds if the ground is sticky, but wait till it is sufficiently dry. For roots of medium size and of fine quality, nothing surpasses *The Student*, and for extra large roots *Maltese*, or *Dobbie's selected*.

Parsley.—Some Parsley seed may be sown now, sowing it near a path, where it may be gathered without treading on the soil. A light dressing of soil and soot should be sown over the land before drawing the drills, 1 inch deep. Sow thinly, cover with fine soil, and thin as soon as the plants are large enough to handle.

THE APIARY.

By E. S. BARR.

The Coming Season and Early Sections.—It is well known that bee keepers throughout the country are considering what can be done with reference to the contest for the County Trophy at the Royal Show to be held at Manchester. That there will be a splendid exhibit is beyond doubt, and proud will be that county which secures it. At the same time no better method could be adopted for showing to the public the great importance of the bee-keeping industry throughout the country; and it should have the effect of pushing on the local people, and extending the work in the proper direction. As the show is held in June, and majority of the bee-keepers have disposed of their best stocks; and even if some have not done so, unless the stocks have been kept in a fairly even temperature, they will have become more or less canced, which will render them totally unfit for an exhibit of this kind. With this object in view, we should prepare our plans so that as soon as the honey-flow commences, we may have our best bees working away in the sections, and so be in the position of getting the largest quantity in the shortest time. Sectional honey, of course, must be the first consideration, and to enable this to be done by the first week in June the brood chamber must be contracted, five or six frames only being left, so that the bees will commence in the sections above, instead of looking after the brood chambers below. Very early swarms may be depended upon to secure a crop of first-class sections. Leaving out the question of the show, we should by this time have made up our minds what it is we intend to do this year—whether we will compete with honey in sections, or extracted. Of course, it is no use for me to advise one or the other, as that which finds the readiest market decides the choice.

The Hive-entrance.—All dead bees should be cleared away when observed, but when none is seen the stocks are best left untouched. The weather we have had lately will have caused the bee-keeper a good deal of anxiety, but as long as the bees are seen flying from their hives we may assume that all is well; but where a quantity of dead bees are seen, and apparently there is no life about the hive, an immediate examination should be made, and the necessary steps taken to keep the stock of bees alive.

Quilting.—Place more quilts over the hives so as to keep the brood-nest warm, as in warm places breeding will have commenced; also remove all wet quilts, and repair or leaky. Cakes of warm candy may also be given, a peep will tell you if bees are about and require it; but do not interfere with them yet. Nothing is more searching than snow-water, and a serious amount of harm may be done if a leak happens to convey the water to the warm brood-nest of a closely-packed cluster of bees.

EDITORIAL NOTICES.

ADVERTISEMENTS should be sent to the PUBLISHER. Newspapers.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

APPOINTMENTS FOR THE ENSUING WEEK.

THURSDAY,	FEB. 18—	Linnean Society meet, Royal Gardeners' Orphan Fund: Annual General Meeting at Anderson's Hotel, Fleet Street.
FRIDAY,	FEB. 19—	Performance of "Dorothy" at St. George's Hall, in aid of the Gardeners' Royal Benevolent Institute.
SALES.		
MONDAY,	FEB. 15—	Greenhouse Plants, Spiras, Paeonies, &c., at Frotheroe & Morris' Rooms. Unreserved Sale of Border Plants, at Stevens' Rooms.
TUESDAY,	FEB. 16—	Roses, Montbrietas, Iris, Anemones, &c., at Frotheroe & Morris' Rooms. Lilium auratum, Burmesee Lilies, Begonias, Aspidistras, &c., at Frotheroe & Morris' Rooms.
WEDNESDAY	FEB. 17—	Roses, Fruit Trees, Shrubs, and Palms, &c., Also Palms, Azaleas, Stove and Greenhouse Plants, from Ghent, at Stevens' Rooms.
THURSDAY,	FEB. 18—	Hardy Perennials, Gloxinias, Clematis, &c., at Frotheroe & Morris' Rooms. Trade Sale of Liliums, Bulbs, Plants, &c., at Stevens' Rooms.
FRIDAY,	FEB. 19—	Established and Imported Orchids, at Frotheroe & Morris' Rooms. Scientific and Photographic Apparatus, at Stevens' Rooms.

AVERAGE TEMPERATURE FOR THE ENSUING WEEK, deduced from Observations of Forty-three years, at Chiswick.—59° F.

ACTUAL TEMPERATURES:—

LONDON.—February 10: Max., 51°; Min., 45°.
PROVINGES.—February 10 (6 P.M.): Max., 50°; Scilly; Min., 36°; Aberdeen.

TEN years have elapsed, as the President reminded his hearers at the annual meeting of the Royal Horticultural Society, since the Society quitted South Kensington under circumstances of great irritation and some humiliation. A strong and active body of the Council fought vigorously for the rescue of the Society, which then seemed on the verge of destruction; and their labours, added to subsequent good management, have succeeded in placing the Society in a position more favourable than could have been expected by the most sanguine. Among the most efficient causes for this have been the lowering of the subscription fee, and strict adherence to horticulture pure and simple. The Drill Hall in which the committees meet, and the room in which the annual meeting was held, were secured by a small sub-committee consisting of the late Mr. GEORGE DEAL, Mr. GEORGE PAUL, and Dr. MASTERS, and nothing more suitable has yet been found. Till that time the valuable collection of books was huddled away in an inaccessible corner at South Kensington. Now it is conveniently housed, though it experiences the usual fate of growing libraries in the form of inadequate space. Still, as our illustration (fig. 31) shows, it is a vast improvement upon the state of matters ten years ago; and the room, about half of which is shown in the photograph, is in these placid times large enough to hold the annual meeting of the Fellows. The great majority of the books, and most of the portraits, are held in trust for the benefit of horticulturists in general, and of Fellows of the Royal Horticultural Society in particular, by the Lindley Trustees. The Trust Fund is very small, so that donations whether of funds or

of books are very welcome. The catalogue is now going through the press, but it can hardly be issued till there is a larger balance at the bankers, and we earnestly hope that further help will be forthcoming, and that those of our readers who have no further need for their horticultural or botanical books or pictures will remember that they will be welcomed by the Trustees, and that to be inserted in the Catalogue they must be sent in at once to the Librarian, Lindley Library, Royal Horticultural Society, 117, Victoria Street.

The Drill Hall, which is hired for the fortnightly meetings, and the Lindley Library, with one small office annexed, constitute all that the Royal Horticultural Society can produce in the shape of a Horticultural Hall or Institute. It is very lamentable, but recent experience has shown that the time has not yet come when we can realise anything better.

We have already published the Report of the society and commented upon it (see p. 114), so that very little needs to be said now. The President, in moving its adoption, followed the lines of the report very closely, and was naturally and justifiably jubilant and grateful to the secretary, officers, and committees, all of whom came in for a well-earned tribute of thanksgiving. Chiswick has been put into thorough order; old, useless sorts of fruit trees have been eliminated, and plants of interest instead of rubbish are circulated among the Fellows. All this is very satisfactory, so far as it goes, but now we want an opportunity to get the Fellows to Chiswick. The Society spends about £2000 a year on that garden, including the large sums required to repair the wear and tear of time, and the enforced neglect of former days. A garden costing so much ought to be worth seeing, but only a very few are likely to visit it, unless some special inducement to do so is offered. The Congresses and Conferences that were held in recent years, are among the most honourable records of the Society, and their results are still most valuable to the horticultural world.

Last year not a single meeting of this kind was held, except the fruit show at the Crystal Palace. We lately threw out a suggestion that a joint meeting of all the committees might be held at Chiswick during the course of the summer to discuss matters of common interest, such as the work done at Chiswick, the number of awards to be given, the principles to be followed in their allotment, questions of nomenclature, questions affecting the relations of the committees one to another and to the Council. Some such subjects as these would serve as a basis for useful discussion, and the remainder of the time might be taken up in an inspection of the establishment. To deprive the Fellows of the Conferences, and practically debar them from taking part in any way in the work at Chiswick, is to stifle rather than stimulate interest.

Reverting to the topics that were mentioned at the annual meeting, we note that the President announced the intention of the Council to confer a Victoria Medal, or something of the kind, on meritorious horticulturists, but nothing was said as to the number of the recipients, nor as to the principle to be followed in their selection, and no Fellow present had any remark to make upon so novel a proposal. This obviously will have to be most carefully considered, and when determined, rigidly adhered to. The bestowal of these medals might well take place at Chiswick in accordance with our suggestion above stated.

There was very little discussion upon this or

any other subject, the Fellows feeling perhaps the force of the adage—happy is the nation that has no history; at any rate, they seemed to rest contented with the Report and statement of the President. Professor FOSTER gave formal voice to the satisfaction that was felt, but stated, truly, that the Society has by no means reached the limits of its usefulness.

Votes of thanks were duly passed, and all seemed over, when a gentleman rose to advocate the culture of Apples in Kent, and the manufacture of cider therefrom. In connection with this, he advocated the establishment of an "Arbor Day," when the local children should be instructed each to plant an Apple-tree. The speaker was anxious that the Royal Horticultural Society should lend their influence in encouraging the scheme; but the President, whilst announcing that the Council would be willing to consider any definite proposal laid before them, evidently thought that the cider-makers needed no instruction from the Society.

LINNEAN SOCIETY.—An evening meeting will be held on Thursday, February 18, at 8 P.M., when the following papers will be read:—I. "On Certain Points in the Anatomy and Morphology of the Nymphaeaceae," by Mr. D. T. GWYNNE VAUGHAN; II. "The Adhesive Discs of *Ercilla spicata*, Moq.," by Mr. T. H. BURRAGE.

FARMERS AND ASSESSMENTS TO LOCAL RATES.—We have been furnished by the Board of Agriculture with a leaflet containing information regarding the basis upon which the assessments of the poor-rate—and practically of every local rate levied under the general law, where the Union Assessment Acts are in force. The proper steps to be taken by persons objecting to the assessment to the poor-rate are briefly set forth, as also with regard to other rates other than the poor-rate. There are other matters which frequently are of great importance to market gardeners, nurserymen, allotment-holders, and cultivators of hardy plants, namely, the assessment of such land to a general district rate in urban districts, and of a separate rate for special sanitary purposes in rural districts. Copies of this leaflet are to be obtained free of charge and post-free on application to the Secretary, Board of Agriculture, 4, Whitehall Place, London, S.W. Letters of application so addressed need not be stamped.

BOTANICAL MAGAZINE.—The February number contains coloured illustrations of—

Myrceolua Antioiæ, Beccari, t. 7517.—One of those very singular tropical Rubiaceae shrubs forming globose tuberous expansions at the base of the stems, inhabited by ants, which repay the hospitality they enjoy by the protection they afford against marauders. The plant is a native of Thursday Island, Torres Straits.

Mastillaria Sandeviana, Rehb. f., t. 7518.—A native of the Andes of Ecuador, the finest of its genus, having flowers 4 inches across, with broad white segments, richly spotted with purple at the base.

Ligustrum coriaceum, Carrière, t. 7519.—A species presumably of Japanese origin. It is of very slow growth, and has densely crowded, thick, evergreen, ovate leaves. We have always found it hardy near London, but have never seen it in flower.

Hemipilia amethystina, Rolfe, t. 7521.—A glabrous terrestrial Orchid, native of the Shan States. The single leaf is sessile cordate, ovate acute, green, spotted with purple. The erect scape bears a many-flowered raceme of small flowers, insignificant but for the prominent white lip, which bears a magenta blotch. Flowered at Kew.

Paracorymbium heliocarpum, Kerner, t. 7520.—A West Himalayan hardy Boraginaceae perennial, with long-stalked, hoary, lanceolate leaves, and loose, many-flowered cymes; the individual flowers about half an inch long, drooping, bell-shaped, with a pink tube and blue limb. Kew.



FIG. 30.—FERNERY IN THE PLEASURE-GROUND; AT LUTON HOO. (SEE P. 95 OF PREVIOUS ISSUE.)

GARDENERS' ROYAL BENEVOLENT INSTITUTION.—We have the pleasure to announce that a performance of the comedy-opera, "Dorothy," has been arranged to take place in St. George's Hall, Langham Place, W., on Thursday next, February 13. The performance is in aid of the special fund being raised by the above Institution to commemorate the sixtieth year of HER MAJESTY'S reign, and will be given by the members of the Westminster Amateur Operatic and Dramatic Society, with full orchestra. The VICTORIA ERA FUND is intended for the temporary assistance of candidates awaiting election, and is deserving of all help possible. Particulars and tickets for the performance may be had from the Hon. Secretary, H. MORGAN VEITON, Esq., 16, Clifford's Inn, E.C.

ULSTER HORTICULTURAL SOCIETY.—At the last committee meeting of the above, it was decided to celebrate the Diamond Jubilee of the QUEEN this year by offering £100 and three medals for competition in forty-eight cut blooms of Japanese varieties of Chrysanthemums at the next show to be held at Belfast on November 16 and following day. The money is to be divided into seven prizes as follows:—1st, £40 and gold medal; 2nd, £25 and silver medal; 3rd, £15 and bronze medal; 4th, £10; 5th, £5; 6th, £3; and 7th, £2. The committee decided to make this class, and a few others, open ones to the gardeners of the United Kingdom. The prize is to be called the Victoria Jubilee Championship, and is presented by the Lady Mayoress of Belfast, and the ladies of Ulster.

CARDIFF HORTICULTURAL SOCIETY.—This Society held its annual general meeting on the 4th inst., when a large number of gentlemen interested in horticulture attended. The report and balance-sheet were adopted, indicating a balance in hand of about £30. It was decided to hold the next show on August 11 and 12, in the Sophia Gardens. His Worship the Mayor is President of the Society; and Mr. W. C. PEACE, who has long been connected with the Society, becomes Chairman of the Committee for the second time. Mr. A. E. DIXON, of Penarth, was elected Vice-Chairman; and the Secretary, Mr. H. GILBERT, was re-elected. It was decided to add the word "County" to the Society's title.

SHROPSHIRE HORTICULTURAL SOCIETY.—The result of the last Floral Fête was announced at the annual meeting on Monday, Feb. 8, at Shrewley; the Mayor in the chair. It appears the total receipts of the summer show were £1,300, and the expenses £3,100. Cash prizes to the amount of nearly £350 have been awarded during the year. After paying the expense of the spring show and sundry sums voted to special objects, a balance of £1,015 remains as the year's net profits, which in accordance with a decision announced in our columns will be expended in the erection of a statue of CHARLES DARWIN, the contract for which is £1,000 complete. The Royal Horticultural Society have joined this society in holding a great Commemorative Show in August next, when the prizes offered by the Shropshire Society will be greatly increased. Under the presidency of Sir TREVOR LAWRENCE, Bart., for the Royal Horticultural Society, and the Right Hon. Lord KENNON for the Shropshire Society, an exhibition of plants, flowers, fruit, and vegetables will be held on a scale perhaps not before exceeded in England.

HOWICK HALL GARDENS.—We understand that the vacancy which has arisen in the charge of these gardens, through the succession of Mr. D. INGLIS to the management of the Duke of Buccleugh's gardens at Drumlanrig Castle, will be filled by a member of the staff at Drumlanrig.

STOCK-TAKING: JANUARY.—The Board of Trade Returns for the first month of the year show an increase in the imports to the value of £1,501,812 or a total of £39,975,668. As will be seen by the accompanying extract from the summary table, the food supplies have fallen off in value—as, by-the-way, have various other subjects; whilst the quantity

of textile materials have gone up to a very considerable extent, cotton and wool figuring largely—wool to the extent of 25,000,000 lb. weight. Our usual extract is as follows:—

IMPORTS.	1896.	1897.	Difference.
	£	£	
Total value ...	38,473,856	39,975,668	+1,501,812
(A.) Articles of food and drink, duty free ...	12,512,808	11,805,167	-707,641
(B.) Articles of food and drink, dutiable	1,892,900	1,516,827	-376,073
Raw materials for textile manufactures ...	9,061,786	11,765,296	+2,703,510
Raw materials for sundry industries and manufactures	3,180,712	3,229,851	+49,139
(A.) Miscellaneous articles ...	1,258,115	1,221,582	-36,533
(B.) Parcel Post ...	122,666	120,275	-2,391

Respecting fruit imports, the following are useful figures:—

IMPORTS.	1896.	1897.	Difference.
fruits, raw:—			
Apples ... bushel.	293,168	280,991	-12,177
Cherries ... ..	...	...	...
Plums	210	...	-210
Pears	834	2,435	+1,604
Grapes	1,589	1,381	-208
Unenumerated ...	47,216	36,630	-10,586
Onions	607,936	494,254	-116,672
Potatoes cwt.	41,672	23,465	-18,207
Vegetables, raw, unenumerated ... value	£38,347	£61,017	+22,670

This table shows more of the *minus* sign than it has for years past, which the "working day" less in the past month, as compared with the same period last year, does not quite account for. The

EXPORTS
for the month show a falling off amounting to the sum of £1,384,113 on a total of £19,762,378. Of course the five Sundays in the month have affected this great section of our commerce; perhaps the settlement of the new American Cabinet may lead to encourage speculation in textiles, and so do something towards balancing items in the next monthly returns.

WASTED ORCHARDS.—Our energetic contemporary, the *Gardeners' Magazine*, has done good service by drawing attention to the miserable state into which the majority of our orchards have been allowed to fall. A short run out of London by any of the main lines of route will furnish plenty of illustrations of neglect and apathy. On the other hand, there is happily evidence that fruit culture is being taken up in earnest and in a business-like way, and hence we may look for the speedy abolition of the "wasted orchards," and their replacement by more practical plantations. This will have to be effected rather by the gardener (market-gardener, to be precise), than by the ordinary farmer, and the railway companies must do their share; some of them have indeed seen that it is their interest to aid in the development of the resources of the land, fruit included.

"GLASSY" APPLES.—Occasionally, and at rare intervals, correspondents send us Apples, a portion of which has a glazed, semi-transparent appearance. Hitherto no adequate explanation has been given of this singular change. But recently M. PAILLEUX (*Bull. Bot. Soc., France*, November 27, 1896) has shown that it is due to a Bacterium which he has been able to isolate.

CULTIVATION OF CANNAS IN WATER.—Our readers will be interested to learn that astonishing results have been obtained by M. MOLIN, nurseryman at Lyons, by planting in spring the rhizomes of Cannas in baskets filled with soil, and sinking these to the rims in a vessel holding water, where upon the roots soon pass through the sides of the basket, and

originate an extraordinary luxuriant growth of leaves and flowers; especially fine, it is said, being the varieties *Königin Charlotte* and *Madame Crozy*.

APPLES FROM THE ANTIPODES.—Arrangements, we believe, are now completed for the transport of the Tasmanian Apple crop to the home markets. Both the P. & O. and the Orient lines will, as usual, do the work, and it is expected there will be nine cargoes in all. The first ship is the *Marsilia*, due April 20; followed by the *Oraba*, *Oreuz*, *Arcadia* (May 2); *Austral*, *Paranautia* (May 18); *Orotava*, *Ballarat* (June 1). About a week will intervene between each arrival, and these steamers are to carry about 100,000 cases in all. There will be some minor consignments from Australian ports; but, of course, Tasmania will send the bulk.

THE PUTNEY AND DISTRICT CHRYSANTHEMUM SOCIETY.—By way of marking the sixtieth year of Her Majesty's reign, the tradesmen of Putney and Wandsworth are this year, we understand, to offer a Silver Cup, value 25 guineas, to be called the Putney and Wandsworth Tradesmen's Commemoration Challenge Cup, also handsome money prizes, in an open class for cut blooms.

FRUIT FROM THE CAPE.—The first instalment of the season's fruit crop has arrived from the Cape in the steamship *Scot*, and has been sold. The consignment consisted of more than 400 boxes of Peaches, fine in quality, if not always large in size. Prices ranged from 6s. to 10s. per box of twenty. The lower price was for a consignment, part of which had got slightly bruised—possibly the perfection of packing has not yet been attained. The retail prices were from 9d. to 1s. each.

BERNARD VERLOT.—The death of this gentleman is announced in a recent number of the *Revue Horticole* (Feb. 1). Our first acquaintance with him was when he was connected with the Jardin des Plantes; subsequently he was a Professor in the National School of Horticulture at Versailles, whilst recently he superintended the trials made by Messrs. VILMORIN, ANDRIEU ET CIE, at Verrières, where we had the pleasure of seeing him last year. VERLOT was an excellent botanist, and his *Guide du Botaniste Herbivoyant* is quoted in most of the text-books.

"EVERYBODY'S GUIDE TO PHOTOGRAPHY."—This is one of the well-known "Everybody's" series, published by SAXON & CO. (Bouverie Street, Fleet Street, E.C.), and is truly described as being "a practical handbook, containing full instructions for amateur photographers, simply written, easily understood." It has the merit that it appeals to real beginners, and does not leave out even those first few easy steps which other authorities too often imagine are known to all men. This volume is small enough to be carried in the pocket, and as the information contained in it is not meant only for novices, may be recommended as a constant companion even for experienced photographers, who may ever and anon be glad to refer to it.

HOUSEHOLD INSECTS OF THE UNITED STATES.—The fourth *Bulletin* from the United States Department of Agriculture, Division of Entomology, is contributed by Messrs. L. O. HOWARD and C. L. MARLATT, and deals with the principal household insects of the United States. There is also a chapter by Mr. F. H. Chittenden on "Insects Affecting Dry Vegetable Foods." It should prove a great convenience to housekeepers to be able to obtain such a reference-book as is this, wherein is brought together much information such as is usually only to be found scattered here and there in various publications. Not merely are the more common intruders mentioned, but they are carefully described and illustrated on an enlarged scale, so that the identification of the species may be made easy. Various ways of eradicating insect-pests are mentioned, and being based upon observation and scientific principles rather than upon theory merely, are as reliable as is the other information contained in this book. Some of the remedies prescribed against large incursions of insects read somewhat whimsically, though

the matter, to those immediately concerned, is certainly serious enough. Thus, as a palliative measure against inroads of fleas in the McGraw Building of the Cornell University, we are gravely told how "Professor GAOR tied sheets of sticky fly-paper, with the sticky side out, around the legs of the janitor of the building, who then for several hours walked up and down the floor of the infested room, with the result that all, or nearly all, of the fleas jumped on his ankles, as they will always do, and were caught by the fly-papers." To some housekeepers, to whom the presence of any insect is more or less objectionable, the following remedy will seem almost worse than the complaint. Certain premises "proved to be swarming with bed-bugs; but very shortly afterwards the little red house-ant discovered the presence of the bed-bugs, and came in enormous numbers, and Mr. PERCANDU witnessed the very interesting and pleasing sight (!) of the bed-bugs being dismembered or carried away bodily by these very minute ants, many times smaller than the bugs which they were handling so successfully. . . . A correspondent goes so far as to heartily recommend the artificial introduction of the ants to abate this bug nuisance." A plan of thinning the too-abundant ranks of mosquitoes is described as being "particularly ingenious and pleasant." It is certainly rather elaborate—as first fly-traps are to be set, the victims falling to which are to be used for feeding small fish which are themselves held captive that (presumably when the supply of flies is short), they may make inroads on the mosquito larvæ with which the water they dwell in is infested. A "quart of flies a day" and larvæ *ad lib.* is certainly liberal diet, and says something for the quantity of insects to be coped with. The paper on insects affecting dry vegetable foods, and describing flour-beetles, meal-worms and moths, and grain-beetles, is rather calculated to spoil the appetite of a fastidious and hungry reader. No doubt a "wormy ham need only be returned to the dealer from whom it was bought;" but vivid descriptions and illustrations of "horrors" enlarged to an almost alarming size may well make the too inquisitive reader regard even the ingredients of his favourite Christmas pudding with disfavour. We can only hope that he will be large-minded enough to overcome this prejudice; to learn first to wonder at, and in the end to admire his household insects, and to appeal to this really useful treatise when he wishes for fuller information about their nature and structure. The handbook also tells us, as has been said, how our little pests may be kept down when their excessive numbers renders such a course advisable.

ISLE OF WIGHT HORTICULTURAL IMPROVEMENT ASSOCIATION.—The monthly meeting of this body was held at the Guildhall, Newport, on Saturday, February 6, Dr. GROVES, B.A., J.P., presiding. A paper was read by Mr. H. J. JONES, Ryecroft Nurseries, Lewisham, on *Chrysanthemums*, which dealt with the entire course of cultivation of the queen of autumn plants from the cutting to the blooming stage. Many questions were asked, and answered by the lecturer. At the close of the lecture a collection in aid of the Gardeners' Benevolent and Orphan Funds was made. The next lecture will be given by Mr. W. TRIBBICK, F.R.H.S., on "Winter Vegetables." Several new members joined the Association.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.—At the eighth general ordinary meeting of the Session 1896-97, to be held at 8 P.M. on Monday next, the 15th inst., at the Institute, 9, Conduit Street, W., Mr. H. E. MILNER will read a paper upon "The Garden in Relation to the House." The paper discusses the style to be adopted, formal and natural, and deals in detail with the site, the approach, entrance and forecourt, shelter, soil, the terrace, and garden formation and planting. The author maintains that in the parts surrounding the house the architectural feeling of its design should be carried out, and that beyond these a broader treatment should prevail, and draw into the scheme the greater landscape. Considerable discussion is expected.

VINEYARDS IN FRANCE: PRODUCE FOR 1896.

—Only twice in the last twenty years (1878 and 1893) has last year's wine-crop in France been exceeded; and this yield is placed at one thousand millions of gallons, or 230 gallons per acre. The produce of French vineyards in 1895 was but half that of its successor. But even vast as is this yield of wine, it is far from being sufficient for the requirements of the French people, for the imports have gone up from six million gallons in 1875 to something like 244 million gallons in 1890; and the official estimate that 200 million gallons will be required, notwithstanding the last great crop. Imports come from Algiers and Tunis in some profusion, but France is much indebted to the foreigner for its ordinary supply—Spain alone sending over the Pyrenees more than 100 million gallons a year. The export of wine from France—about 100 million gallons twenty years since—has kept falling off, until now they are represented by less than forty millions.

FRIEDRICH LESEMANN.—A well-known German gardener, formerly in the service of the Duke of BRUNSWICK, died on December 16, 1896, at the age of seventy-one years. The deceased was a Fellow of the Horticultural Society of Vienna, and belonged for a great number of years to the managing committee.

BUNYARD'S CENTENARY SHOW.—We are informed that from the proceeds of the show of fruits held by Messrs. GEO. BUNYARD & Co., Maidstone, in the autumn of last year to celebrate the centenary of the firm, cheques for five guineas have been sent to the Gardeners' Royal Benevolent Fund, the Royal Gardeners' Orphan Fund, and to the Church Institute at Maidstone respectively.

THE CRYSTAL PALACE.—Our readers are aware of the regrettable illness that has overtaken Mr. HEAD, who has been Superintendent of the Garden Department at the Crystal Palace for many years. This has compelled Mr. HEAD to resign the position, and we understand that Mr. GEORGE CASELTON has been appointed to succeed him in this responsible position.

NEW VARIETIES OF VIOLETS.—We have received from Mr. GEORGE, of Cowdry Park Gardens, two bunches of beautiful Violets, under the names Victoria and California. The first-named, Mr. GEORGE thinks, is the finer flower, and perhaps the finest Violet existing. Both have large flowers, and long, stout footstalks, which render them well suited for arranging in vases, or for use as cut and spray flowers, without the trouble of wiring them. The flowers were produced on plants growing in the open border, and protected at the sides by means of boards set on edge, and carrying frame-lights, no heat being employed. At night mats are usually thrown over the lights, supplemented with litter during severe frost.

PUBLICATIONS RECEIVED.—Supplement to the *Seed List* of H. KLATT, 69, 70, Graefe Str., Berlin, concerning the pronunciation and spelling of the names of plants.

PLANT PORTRAITS.

- AZALEA INDICA* MADAME FR. VERVAENE, Revue de l'Horticulture Belge, February 1.
BLEBBIA CANTERB., sp. nov., Ed. André, Brasils merid., Revue Horticole, February 1.
CALCEOLARIA ALEA, Garden, January 23.
CHIRONIA FLORENTINA, Revue de l'Horticulture Belge, January.
CONANDRUM RAMONDIOLIDES, Garden, Jul. 2, 1897.
DEBORIDEM WARDIANUM, Revue de l'Horticulture Belge, February 1.

BOOK NOTICE.

DICTIONNAIRE ICONOGRAPHIQUE DES ORCHIDÉES. RAPIDLY do Messrs. A. COGNIAUX and A. GOOSSENS push on their work of depicting and describing Orchids, as another batch of illustrations reaches us, and quite up to the standard of excellence displayed in former issues. The genus *Oncidium* is

commenced with *O. Forbesii*, *O. Lanceanum*, and its white-lipped variety *Louvrexianum*, and the favourite "Butterfly Orchid," *Oncidium Papilio*. *Odootoglossums* are continued with *O. crispum virgale* and *O. Pescatorei*; *Cattleya* with *C. maxima*, *C. Dowiana*, and *C. D. var. aureo-marmorata*. Of *Cypripediums*, *C. Curtisii* and *C. Laysenianum* are given, the latter remarkably like the *C. × Lillian* Greenwood exhibited at a recent meeting of the Royal Horticultural Society. Of the genus *Lælia*, as well as of some of the others not already published in this work, the customary description and essential characters are given, the plates being *Lælia prastans*, which authorities in this country at least consider only a form of *Lælia pumila*, and *Lælia longipes*, Rehb. f., which, if the identification be correct, seems to be the plant known as *L. Lucasiana*, Rolfe, and in some gardens as *L. Crawshayana*. The only difference appears to be that in the plant figured as *L. longipes* the sepals and petals are nearly white, and not pale lilac, as usually seen in *L. Lucasiana*. Possibly in the plant illustrated the surface colour had not developed, or had faded. The plant, the form of the flower, and the peculiar crimped yellow lip seems to be identical. Herein is seen the usefulness of these plates, as in this instance a species may find its way back to its prior name, or a very rare one be made known.

THE CANNA.

The recent introductions of this genus are becoming very popular, on account of their brilliant-coloured flowers, and the ease with which they are grown and stored when at rest. I employ many of the fine varieties for massing in the gardens and for sub-tropical beds, they are now almost indispensable. When the more recent varieties recover from the weakness caused by untitulation for propagating purposes, I am of the opinion that we shall see such elegant types as *C. Austria* and *C. Italia*, freely used in out-of-doors gardening. The present is a suitable time to prepare the plants which are intended to be planted out, as while the potting for general purposes takes place, the varieties for massing may also be dealt with. The roots may be divided, and the shifting-on principle may here be advantageously set aside by affording them sufficiently large pots at the first, so that the entire season may be gone through without re-potting, farm-yard liquid-manure doing the rest.

The bulk of the potting compost may consist of sound fibrous loam, decayed horse-droppings, sand, and wood-ashes, with a dusting of Thomson's Vine and Plant Manure. Do not afford any water for some time after re-potting the rhizomes, and afford a mild bottom-heat if possible, for although this is not essential, it is a ready means of getting small pieces established rapidly. Beside those already named, there are *C. L. E. Bally*, *C. Kioigio* Charlotte, *C. Kaiser Wilhelm II.*, *C. Antoine* Bartou, *C. Charles* Henderson, *C. Florence* Vaughan, *C. Star* of '91, *C. The* Garden, and *C. Sophie* Ducher. I grow a great many more varieties than the foregoing, but these comprise the best of them. *J. F. McLeod*.

BARON SIR FERDINAND VON MUELLER.

The following extract will be read with interest, as supplementing what has already been published concerning this indefatigable naturalist:—
 He was a man below the middle height, not robust, but evidently possessed of a good constitution, otherwise he could never have set the laws of health at defiance as he did, and have lived to be threescore and ten years. Everything in the way of personal comfort had to give way to the cause of science.

He seemed to be always ready for a chat, a good long chat, in fact a conference, and the wonder to me always was when he found time for his work. I have been closeted with him for two or three hours at a stretch, and I repeated apologies on my part for taking up so much of his time were unheeded. All that one had to do was to listen. His power to speak for such

a long stretch surely indicated sound lungs, but both of his parents died of consumption before he was twenty-one, and he believed he inherited weakness of this kind. In consequence, be the weather warm or cold, he used to wear an Angora comforter round his neck, and on chilly or foggy days to make one end of the comforter a respirator. He used to dress in black, and usually his feet were enveloped in wooden shoes (sabots). He was far too much devoted to his life-work to spend more time or money than was unavoidable over his dress, and, as he never had a wife to take him in hand, he did not dress fashionably. The only finery he allowed himself to wear were his orders and some of his medals, which he donned on special occasions. He could make a display of these that no governor, politician, or scientific man in Australia could rival, and they seemed to give him

should die in harness. . . . His illness lasted only a fortnight, and for the first week he would insist on getting up and going into his office, though only for a short time. His death was, no doubt, due to an affection of the brain, brought on by constant study, worry, and insomnia, to which might be added, almost a total want of bodily exercise. He passed away (October 10) quite peacefully, without any apparent pain."

Bailey of Brisbane, Guilfoyle of Melbourne, and the writer, took steps (which we were able to carry out through Mr. Guilfoyle's kindness), to place on his mortal remains wreaths composed of flowers indigenous to our respective colonies; and so, embowered amongst the Australian spring-time flowers he loved so well we let him rest. *Agricultural Gazette of New South Wales.*

must be warmed to 80°; and it should consist of rich turfy loam, leaf-mould, and a small quantity of decayed horse-droppings, with a considerable quantity of silver-sand. Grow them in a very warm, moist house, affording water in abundance, and syringing them twice or thrice a day. No trouble should be spared to keep the plants free from red-spider and Thrips, which, if allowed to infest the foliage, soon render them unsightly objects. Nothing is so inimical to these pests as abundant syringing, and dipping the plants overhead in a mixture of black-soap with a teaspoonful of petroleum to every 4 gallons of water. This is a capital insecticide for Thrips, killing the insects and their eggs. If a plant becomes badly infested with red-spider, sponge the leaves with soap-suds. As these plants are very easily injured even in summer by being taken from the



FIG. 31.—COUNCIL-ROOM OF THE ROYAL HORTICULTURAL SOCIETY, AND HOME OF THE LINDLEY LIBRARY, 117, VICTORIA STREET, WESTMINSTER, S.W. (SEE LEADING ARTICLE, P. 108.)

pleasure. This was a little vanity (I certainly do not use the word in an unkind sense) that sometimes amused onlookers, and no one would begrudge him the pleasure they gave him.

The Baron always spoke with a strong German accent, and he had a kindly, conciliatory way of speaking. His literary style was quaint and peculiar; he loved long, often involved sentences, and long words, often of his own coining. His English often lacked the structure of that language, but his sentences were usually well worth paraphrasing. One little peculiarity was his epistolary style. The "Dear Mr. So-and-So" would never begin the letter as is customary, but it would be found later on, after an introductory paragraph or two. One of his characteristics certainly was quaintness, of which one could readily give a number of additional instances.

I cannot do better than quote from a letter from Mr. J. G. Luehmann, for many years the Baron's right hand in his botanical work. "The Baron had, at least, his one great wish fulfilled, namely, that he

CULTURAL MEMORANDA.

CODIÆUMS (CROTONS).

THESE exceedingly beautiful and useful plants, if wanted when small for decorative purposes, should be struck from cuttings put in at intervals of two or three months, the cuttings being placed singly in small pots arranged in groups, and covered with large bell-glasses. If the bottom-heat is kept steady at 55°, and the air moist, roots soon form, and the lower leaves are retained on the cuttings. When it is ascertained that the cuttings have roots, air should be admitted to them by tilting the bell-glasses, gradually affording more air till the plants can bear full exposure without flagging. As the uses to which *Codiæums* are put in the dwelling cause them to lose the leaves at the bottom of the stem, those plants which have grown higher than 1½ foot may be topped, and the tops made use of for cuttings. When potting *Codiæums* at the present season, the compost

stove, any which are to go to the conservatory or greenhouse at that season should be gradually inured to a lower degree of heat. This also holds good of plants going to exhibition or into the dwelling. Beyond pinching the tips of the shoots to give bushiness, the plants require but little help, as their growth is naturally bushy and regular. In order to bring out the rich markings of the leaves, the plants must be afforded sunlight in abundance at all times. Our *Codiæum*-house is kept in the winter at 60° to 70°, according to the state of the weather. *J. H. C. S., Cheshire.*

TREES AND SHRUBS.

THUYA ORIENTALIS FALCATA.

SOME of the many forms of the Chinese arbutus are by no means readily identified, but such will not apply to the subject of this note, for the curiously-shaped cones render recognition both speedy and

certain. The partially-upright habit, too, might go far in determining the variety, but without fruit such means of identification would be hazardous, so many partaking of the dense, conical habit of the shrub in question. The large deep-green cones, of very irregular shape, and with the scales terminating in long-hooked points, resembling the fangs of a tooth, are different to those of any other member of the species. Each cone is fully three-quarters of an inch long, and composed of six scales and six seeds, two to each of the lower scales being the usual arrangement. The seeds are wingless, and weightier than those of any other of the *Thuyas*—31,500 going to make up a pound weight; while in *T. occidentalis* and *T. gigantea* the figures are 156,566 and 94,000. These figures are the average of four trials of each, with freshly-collected cones.

T. orientalis falcata is an excellent churchyard shrub, but for garden purposes it is too harsh, formal and stiff; and when old, it falls apart, being then top-heavy. *A. D. Webster.*

QUERCUS COCCINEA.

This splendid species of scarlet oak, a native of the Eastern United States from Pennsylvania to Georgia, is at the present time being much planted there as a street and road tree. The tree grows to a height of 70 to 80 feet, has dark-coloured (not yellow) bark; leaves egg-shaped in general outline, but divided featherwise, with three deeply cleft divisions on each side—shining, smooth, dark green above, and beneath of a paler hue. The foliage changes in the autumn to scarlet, or to a more or less orange-scarlet. This species would make a superb street-tree for our less smoky towns, and for country roads near towns anywhere. We are surprised that it has not been, as yet, taken up by the trade, and recommended for this kind of planting. Seed should not be difficult to obtain.

HOME CORRESPONDENCE.

REMOVAL OF LARGE TREES.—I enclose a photograph of a fine Purple Beech, which we moved last November for Mr. Wilson, The Hermitage, Holmes Chapel, near Crewe. The tree was on a terrace close to the angle of an additional wing, which has been added to the house, and unfortunately both roots and branches had been cut to a considerable extent to make room for the foundations and in the erection of the building. The tree was moved some 50 yards, and partially turned round in the operation. The dimensions of the tree are as follows:—Girth at ground, 9 feet 2 inches; girth at 4 feet from ground, 6 feet 3 inches; height, 40 feet; diameter of branches, 62 feet. I estimate the total weight moved at 30 tons. We moved two very large trees, a Lime and a Horse-Chestnut, in May, 1896, at Worsley Park, for the Bridgewater Trustees. The Chestnut, which was the heavier tree of the two, was taken up an incline of at least one in six. Both trees were in growth, and I hear they have done well. At the time the Buckland Yew was moved by my late father in February, 1880, various opinions were expressed as to the ultimate result of the removal. Such of your readers as remember the correspondence will be interested to read a letter we have received from Rev. Tuberville Evans, vicar of Buckland, Dover, in December last:—

"Buckland Vicarage, Dover, Dec. 10, 1896.
"Dear Sirs,—My conscience smites me. I believe you were good enough to ask after the Yew a year ago, and I then promised to take a photograph of it in the spring, and send you a copy, and I now know I have not done so. I will try and remember to do so when the tree is in blossom, and meanwhile I will send a photograph I took of a portion of it in May or June last. I am happy to tell you that it is in splendid condition, and improving every year. There is no doubt your good father's skill, and the intense interest he took in the work, have added many years, perhaps centuries, to its life.—Yours faithfully,
"TUBERVILLE EVANS."

At the present time we are preparing to move an Oak of considerable size at Copped Hall, Epping, the dimensions of which are as follows:—Girth at ground, 10 feet 2 inches; girth 4 feet from ground, 6 feet 6 inches; height, 46 feet; diameter of branches, 45 feet. If any of your readers would like to witness the operation, I shall be pleased to inform them privately on which day the tree will be moved. *John Barrow, Elston Nursery, Borrowash, Derby.*

BULBS FROM CHITRAL.—Mr. Duthie very kindly sent me last summer a supply of corns labelled "White Crocus, Chitral." Several of these have now flowered, some in the open; but the flowers are yellow, not white, and have been diagnosed at Kew as *C. Korolkowii*. It is, of course, possible that some of the corns which did not flowered this year may throw up white flowers next; but this seems unlikely, since the foliage of all is alike. My hopes of a new species are therefore dashed; still, it is interesting to leave a new habitat for this most eastern crocus. A few corns had been sent me in 1895, but none of these really flourished. With them were a few Tulip bulbs, which did flower last summer. These, however, could not have been of the same kind as those mentioned in the *Gardeners' Chronicle* a few weeks back, for they were simply *T. Clusiana*, though varying a little from the type in the depth and sharpness in outline of the purple blotch. *M. Foster.*

THE DAWN OF REASON IN A FUNGUS.—One of the subjects in which I am interested is the Dawn of Reason in animals. Seeing an essay advertised under the name of "The Dawn of Reason," by James Weir, M.D., in *Medical Reprints* for December 15, 1896, I purchased the number. To my surprise, I found that Dr. Weir had detected in the yellowish fungus, well known to gardeners as the "flowers-of-tan," and to botanists as *Aethalium septium*, not only vision, necessitating an eye and a brain, but "memory and conscious determination." "The natural habitat or dwelling place of *Aethalium* is a minute, microscopic animalcule of very low organisation, is sawdust." "Minute microscopic animalcule" is good—the fact is, this fungus is sometimes 1 foot across, and 1 inch or more thick. It certainly sometimes grows on sawdust, but it is very common on tan, on rotten wood, on tree stumps, and various other things. "If these creatures," says the Doctor, "be taken from the sawdust and placed in a watch-glass in which there is water, they will confine themselves to it; but if the glass be placed on sawdust they will leave it, crawling over its sides in order to get into more congenial surroundings—the sawdust. This shows conclusively," continues Dr. Weir, "that they recognise the dust through the transparent glass, and that they also remember and regard it as a more desirable home." Evolutionists would do well to discard Amphioxus at once, and see if they can trace the origin of man to *Aethalium*. Unfortunately, Dr. Weir has not told us whether he was able to detect a rudimentary backbone in this "creature" whilst it was looking through a watch-glass. In conclusion the doctor says, "Memory, conscious determination, and the fundamental principles of reason are, in this instance, clearly demonstrated." It is hardly necessary to comment on this; and there is a great deal more of the same stamp in the article referred to. It is to be hoped that the daily press will not get hold of it, or something even more startling may see the light in "leaders" and columns of "scientific news." *W. G. S.*

"UNFAIR TRADING."—The best thanks of the trade are due to you for publishing, and to "Local Florist" for writing, his able article in last week's *Gardeners' Chronicle*, on this important subject, which I trust will be the means of exposing, if not eradicating, this unfair system of trading. Another class of unfair trading is that practised by many noblemen and gentlemen throughout the country of sending to market choice fruits, Tomatoes, Cucumbers, flowers, &c., which in many instances have been expressly grown for that purpose, to be sold wholesale in competition with those who earn their living solely by marketing these goods, but who cannot possibly compete with their richer rivals, inasmuch as the latter are contented if their sales assist in reducing the wages' account of the garden; whereas the other has no other means of support for his family and himself, and is too often at his wife's end to know how to make ends meet—and sometimes this unfair trading spells to them ruin. Surely these gentlemen market gardeners cannot have thought of the unfair

way they are competing with the working-man market-gardener, or I feel sure some of them at least would discontinue this unfair practice. *Justice.*

PENRHYN CASTLE GARDENS 40 YEARS AGO.

—As an old Penrhyn man I was glad to observe its reputation for good gardening supported by the testimony of Mr. Crump's recent issue of the *Gardeners' Chronicle*. Forty years have sped since I worked in these gardens, and in those days I have heard competent judges say that the keeping of the gardens at Penrhyn was equal to anything in Great Britain, praise which is well merited at the present time. It was during my stay that the Queen and Prince Albert were entertained at Penrhyn Castle for nearly a week, together with a number of Ministers of State. On this occasion the sides of the carriage drives were lined with thousands of villagers and quarry-men to greet Her Majesty's arrival, and choirs of Welsh singers from Bethesda, who attended the Castle Chapel and sang to her Majesty's delight; memorial trees were planted, the oldest men employed in the gardens assisting. In those days the Grapes that were grown at Penrhyn were fair, but they would not quite reach Mr. Crump's high standard of excellence. Pine-apples were well done, and Mr. Burns was much pleased with a gold medal awarded him by one of the London societies for a number of the Queen Pines weighing over 5 lb. each, which he sent to an exhibition. The espalier Pear-trees at that time were some of the best in the kingdom, and I recollect on one occasion we exhibited at Bangor show a dish of White Brunswick Figs from a south wall, and every fruit weighed fully 8 oz. *R. M., Newbury.*

BEURRÉ DIEL PEAR.—This variety is usually classed as being in season in November and December; with me, however, it has kept this year till February 8, and I was enabled to send it to the show, and to eat it. I may say that the fruits were gathered early in October, from some aged trees growing on a wall, and no particular pains were taken to ensure good keeping, the fruits being kept in a cool, unheated room. *J. Voss, Kelleston Hall Gardens, Derby.*

PARENTAGE OF ROSES.—I find that in an article entitled "A Manse Garden," contributed to vol. ix. of *Amateur Gardening* (p. 351), which appeared many years ago, I have spoken incidentally of Etienne Levat as being the parent of Duke of Fife. So far as I am concerned, the derivation of the Scottish Duke is a matter of small importance, as this Rose has never been successful in my garden. I am much more enamoured of Duchess of York and Duchess of Fife. *David R. Williamson.*

RORIDULA GORGONIAS.—Mr. Moore states in his note in your last issue, p. 96, that this plant flowered at Edinburgh and Dublin in December of last year. Our plants showed for flower in November, and if the plants in Dublin have behaved like those at Edinburgh, your correspondent will bear me out, when I say that the buds are very slow in expanding, and when they do open, only one, or perhaps two, expand together. The first flowers on our plant opened early in December. My note of the flowering of this species in the *Gardeners' Chronicle*—sent really on January 11—was kept back in order that a photograph, showing the inflorescence fairly developed, might accompany it. The plants that first flowered here had all white flowers. Some that are now coming into flower show a pink colour, and we have also some plants with partly pink and partly white blooms. Whether this variation is due to the different conditions under which the individual plants have been grown here, is a point about which I may be able to say something at a later period. *R. J. Harrow.*

ADIANTUM CAPILLUS VENERIS, VAR. SEMILANATUM.—Some years ago, when staying in the west of co. Clare at the village of Lisdoonvarna, noted for its sulphur and iron spas, I collected plants of an *Adiantum* growing in the deep and narrow clefts of a large plateau of waterworn limestone-rocks within view of the Atlantic ocean. So many were these clefts in the rock, that when lying on my side with downstretched arm I could only here and there reach to a plant. I have kept and grown it ever since, and recently specimens submitted to Mr. Baker at the Herbarium, Kew, have been determined by him to be the variety known as *semilatum* (Lowe), and he suggests that the fact should be put on record. The fronds were remarkably long, and bearing distinct and large bold pinnules. It may be of interest to Fern-growers to learn that this Fern has been collected in Ireland. *J. T. Bennett-Pot, Chesham.*

CEDRUS DEODARA AND C. LIBANI.—There having been various articles upon this subject in your pages, I venture to send you a few measurements which I made of three of the healthiest specimens of Cedar of Lebanon growing in this country. They are three entirely distinct varieties, and the measurements were taken on June 4, 1895. The first specimen has a height of 100 feet, girth of stem 2 feet from the ground of 17 feet, circumference of branches 225 feet. This specimen has foliage of a dull green colour, and branches that stretch out horizontally; the cones are a little more conical than specimen No. 2, and a trifle larger. Specimen No. 2 has a height of 110 feet, girth of stem 2 feet from the ground of 21 feet, circumference of branches 285 feet. This tree has foliage of a very velvety-green colour, and very short thick needles, and bears cones in great profusion, which are shorter and rounder than the preceding variety. The third specimen has a height of 100 feet, a girth of stem 2 feet from the ground of 17 feet, circumference of branches 285 feet. This tree is the most graceful and elegant of the three. The foliage is of a very light grey colour, and forms a fine contrast to the other two. It does not yield cones nearly so freely, and these are of a light greenish colour, and much more conical than either of the others. All three yield a great profusion of male catkins. I may mention that the three specimens are in a row, the largest specimen in the middle, in front of the residence on a sloping lawn, and they have ample space around them. In the winter of 1896 I felled a very good specimen of *Cupressus macrocarpa*, which had been partially killed by the sharp weather of 1890; it was 69 feet high. The wood of this species is of a lighter colour, being very soft. *M. E. Mills, Coombe House Gardens, Croydon.*

GRAPES GROS MAROC AND OTHERS.—In regard to varieties of Grapes shown at Edinburgh last September, I am glad to notice that the subject has been brought to the notice of gardeners in general. It is a notorious fact that Gros Maroc, Altwick Seedling, and Black Alicante Grapes had preference on this occasion to such fine varieties as Muscat Hamburg, Madresfield Court, and Muscat of Alexandria, and I am able to endorse everything Mr. Ardie wrote on p. 85 of the *Gardeners' Chronicle* for Jan. 30. I have exhibited Grapes at the Edinburgh shows for many years with more or less success, and at the last September show I had no reason to be dissatisfied with the judges' fact, but I am bound to say that I never attended any show where more adverse criticism on the decisions of the judges was to be heard, especially in the larger classes; and everybody seemed astonished when the awards were made. I agree with Mr. Divers (see *Gardeners' Chronicle*, p. 96), that Mrs. Pince, Madresfield Court, Muscat and Muscat Hamburg are sometimes shown in poor condition, and had this been the case at Edinburgh, there would have been little or no comment, but the reverse was the case; and it was in fact of the fine quality of these varieties, in size of bunch, berry, and finish that the awards caused wide-spread dissatisfaction, amongst exhibitors and non-exhibitors alike. It is, I think, high time that something should be done in the way of classification of Grapes at the Edinburgh shows, and others at important centres north of the Tweed. *Hugh Thomas.*

— I see Mr. Divers classifies this Grape as one that is very easy to grow; with me, however, it is very difficult, in fact I can do no good with it. I have tried various ways, such as syringing when in bloom, fertilising with Black Hamburg pollen, &c., but still the bunches, which are large for this variety, consist of mostly stoned berries. The Vine is in a late house containing several varieties, an inside border, and growth is very strong. The flavour of the berries which come to perfection is very good. I am constrained to ask if there are two varieties of this Grape, as those I often see exhibited have rounder berries, and denser bloom than those I have here, which have oval berries of a deep plum colour, when the bloom is removed. My late employer pronounced the flavour first-rate, but did not like Gros Colmar, Altwick Seedling, or Alicante. In my opinion, the former Grape always has an earthy flavour till it has been cut from the Vine for upwards of a month. In regard to the question of the relative merits of Grapes on the exhibition of the relative merits of Grapes on the exhibition, I have been an exhibitor for many years, and think judges, as a rule, lean too much towards size and appearance. If they would just ask themselves this question, "Would my employer eat these Grapes at this time of the year?" their award would often be different. It is monstrous to observe at shows held in July and

August, Gros Maroc, Gros Colmar, or Alicante, &c., while there are plenty of Black Hamburgs, Madresfield Court, and other fine-flavoured Grapes to compete with. After the middle of September we expect to see late Grapes on the exhibition table, and then size and appearance should have due weight, when accompanying quality. Personally I would place the Black Hamburg as far in front of other black Grapes as the Muscat of Alexandria is placed in advance of the white varieties, but we often see it placed second to other kinds, of finer appearance in mixed classes. *John Wilkes, The Gardens, Cresswell Hall, Stafford.*

— After many years experience in cultivating the Grape-vine, I come to the conclusion that outside borders soon become inert masses of soil, with a temperature that is low to stimulate early and quick root action, hence shanking; and I believe that most of the fine Grapes we see at exhibitions are grown on borders made inside the vineries. The Gros Colmar Vines at The Hayes are planted in its inside borders, and being started early in January, they are afforded a long season in which to mature the fruit, little air at the top and bottom being afforded all through the forcing season. When the fruit commences to colour, more air is given than heretofore, and water is freely applied at the root with plenty of artificial and sun heat. In reference to the size of the borders here, I may inform "Cicestrian" we have a viney planted with Vines of Muscat of Alexandria at 5 feet apart in an inside border that is 4½ feet wide by 2 feet 4 inches deep, with two rows of 4 inch hot-water pipes underneath. These Vines are pruned on the spur system, as are all our Vines, and they have carried good crops of fruit for the last 18 years. I attribute my success to a warm border and an abundance of water. For many years they have been started early in the month of February, watered at intervals of three weeks to the beginning of May, weekly to the end of September, the quantities being gradually reduced as winter approaches. The top soil is removed annually, and a layer of freshly-cut turf laid on the roots, together with a good dressing of cow-dung, a finish being put to the whole with some fine soil. The variety Lady Downes' in a border of the same size, eight years planted, and started six weeks later, is doing equally well. Should "Cicestrian" contemplate planting, I would advise him to try inside borders for Grapes ripening at all seasons. I well know that the orthodox size of a Vine border about six feet wide, and the measurements of those we have here, yet "Cicestrian" may with proper attention to details produce good Grapes in borders of such dimensions as above stated. *John Bates, Stone.*

— Would Mr. Ardie kindly tell us why he did not write sooner about the judging of Grapes at Edinburgh in September, 1896? I must say that I am surprised at his boldness in endeavouring at this date to challenge the decision of the judges at that Show, and still more at his audacity in stating that "The same thing occurred in the four-bunch class; in fact, it would seem that quality was not recognised, as the coarsest and most ugly shaped bunches of the coarsest varieties were those which had the preference." And then asks, "What do northern gardeners think of that?" Being a northern gardener, I think that statements such as the above are, to put it mildly, very misleading, and have very little, if anything, to do with the "merits and demerits of Gros Maroc Grapes." In my opinion such statements are more like the pent-up growl of a disappointed exhibitor than of a Scottish gardener who is anxious to find the position Gros Maroc should take in a competition with other Grapes. I have to ask Mr. Ardie to prove wherein his statements of coarseness and ugliness apply to any of the bunches staged, either in the lot for "Six not less than three varieties," that gained 1st prize, or the "Four not less than four varieties," which gained 1st prize? Mr. Ardie says that he "noticed at the same show that the judges preferred the flavour of Black Hamburg to that of Muscat Hamburg." Perhaps the judges took notice of a foot-note in the schedule referring to that class, which says, "These bunches must weigh not less than 1 lb. each." Mr. Ardie asks who is to blame for driving out the grand Grapes from our exhibitions, and straightway blames the judges; making out himself that the "grand Grapes" were there, but that the judges ignored them. I feel sure that the judges selected by the Royal Caledonian Society are gentlemen who will not pass over or ignore "grand Grapes" in favour of the so-called "coarser varieties," all cultural points being equal. *A Northern Gardener.*

GARDENERS' ORPHAN FUND.—Would not the celebration of the Queen's Diamond Jubilee be a most

fitting opportunity to bring before Her Gracious Majesty the splendid work of the Fund instituted as a commemoration of her Jubilee in 1837? The loyal, but still very responsible, step taken in placing thirteen candidates on the Fund this year without election, to commemorate the sixty years' reign, would, I feel confident, practically appeal to the proverbial womanly and tender heart of the Queen, on behalf of a class of her subjects who, by their very helplessness and straightened circumstances, bring out all that is noblest and best in the characters of those in high places, tending, to the recent language of the Prince of Wales, to brighten the lives and ameliorate the condition of Her Majesty's poorer subjects. I observe in the same notice which gives the gratifying intelligence as to the free election of the thirteen candidates, that the annual dinner will take place at the Hotel Cecil on April 14, under the presidency of Sir John Whitaker Ellis, Bart.—a good step in its way, and one, no doubt, that will be a financial success. The very cost, however, of attendance at such a function must of necessity absolutely shunt out what may be called the purely gardening element from participating in this "feast of reason and flow of soul" in connection with the Fund, and a grand opportunity is thus lost to the horticultural in touch with all classes of the gardening community. Why not have a reasonably priced supper on the day of the forthcoming annual meeting of the Fund in February, and cordially invite subscribers to the business of the day, which would give those able to attend an increased interest in its working and support, and if the supper idea be carried out, a very enjoyable opportunity of exchanging mutual congratulations? A dinner, costing 5s. per head, is arranged to take place on Friday, Feb. 19, at Anderson's Hotel, Fleet Street, at 6 to 8 p.m. Evidently the hope that the Fund is not to be incorporated as it should be by the craft. Can such a state of affairs be wondered at? If one may so express it, the Fund wants demoralising. Look through the subscribers' list, and see how very small a proportion of journeyman gardeners are represented in it, just the very class that should support it, in view of future eventualities. The growth of gardeners' mutual improvement associations and similar institutions is a very healthy sign of the horticultural times. Could not the aims and objects of the Fund be broadened to include the numbers of young men attending school, that they may be induced to become subscribers? It may be said that to many of these the Fund would not specially appeal. True, but the object is such a good one, and the subscription is so small (only about one penny per week!) that the cry of the orphaned ones would not, I am sure, pass unheeded by those who are to represent the gardeners of the future, if the claims of the Fund upon all connected with the art of gardening were properly placed before them. *Life Member.*

HORTICULTURE: PAST AND FUTURE.—How much we all know respecting the condition of horticulture to-day! What it has been in the past those who are old, or have access to early gardening publications, can tell fairly well, as to what horticulture is to be in the future, we have no knowledge beyond what is furnished through the capacity of comparing what it was fifty years ago with what it is now, and reasoning by analogy accordingly. I have been led in this train of thought through having been permitted a hurried glimpse at some of the leading publications of diverse kinds, some half a century old, and having a lively recollection of what gardening was in those far-off days, also cannot now help wondering what it will be half a century hence. Undoubtedly we have advanced marvellously, and gardeners to-day have at their disposal a wealth of material, of which their fathers did not dream; with that material have come also much heavier responsibilities and duties. We have but to turn to the *Chrysanthemum*, for instance, for an example, whilst in other directions Orchids, Roses, Holly plants, florists' flowers, and domestic floral decoration, show how the gardener's duties and labours have developed. We must not forget, however, that for all this wonderful expansion, whilst we are greatly indebted to trade enterprise, to native energy, to great wealth, and to the agency of the press, yet to nothing do we owe more than to the removal of the heavy duty that once existed on glass, thus enabling vast numbers of glass-houses to be created cheaply and to the introduction of the system of heating them by hot-water, a method that holds its own against all other methods. Still, the next great operating agent may be found in electricity. That is, no doubt, a marvellous force, and may yet work wonders for horticulture. *A. Z.*

AN OLD ALBUM OF FLORAL DRAWINGS.

In the department of prints and drawings in the British Museum, there is preserved an album of floral drawings upon vellum, made by an artist named Holzbocker in 1660. The drawings represent almost exclusively florists' flowers of about 240 years ago; and as every illustration is most minutely and elaborately finished in colour in the style of a miniature, the pictures give a very good idea indeed of what our forefathers' garden flowers were between two and three hundred years ago. The drawings are a little prim and formal, and often a trifle out of perspective, and sometimes bracts and other little details are left out. There is also the too frequent tendency to make all the blooms and leaves face the spectator with nothing behind, but notwithstanding these slight defects, the examples have obviously been taken direct from Nature with painful care. The drawings resemble in style and minute finish those of the brothers Bauer in the British Museum of Natural History, Cromwell Road; they, however, do not quite come up to the standard of the Bauers' work. The pictures are in body-colour, so that they somewhat resemble minutely-finished work in oil. No sections, or floral enlarged details are given, the object of the drawings clearly being to give striking and highly finished representations of popular garden flowers. None of the drawings have names attached, but they are numbered, and the numbers are referred to in a full index. The latter has, in some instances, curious spelling, as *Scapiosa*, *Lokabunda*, *Blatturia*, &c. In turning the drawings over, one is at once struck with the extraordinary advances made by florists upon the flowers to which they have specially turned their attention; whilst certain other plants, as *Jasminum*, the *Orange*, and such-like, remain now precisely where they were in 1660.

Amongst the first illustrations are *Aconites*, *Anemones*, double *Scillas*, *Hyacinths*, *Fritillarias*, and *Crown-Imperials*; one of the latter is a very curious fasciated example. There are many *Tulips*; and these are small, and very interesting—the largest, only 2½ inches in extreme length of petal, is named "Goliath." Under *Ranunculus* many double forms are given, and one red *Ranunculus* is prolific. One variety has rose-coloured petals, which form the disc, with blue guard-petals. *Pionies* are well represented, but the blooms are all very small, the largest only 2½ inches in diameter. The *Gladioli* is well represented, but the spikes only carry from four to six flowers, and the largest bloom is only 1½ inch across when expanded. The difference between garden *Gladioli* of then and now is astonishing. A double *Solomon's Seal* is illustrated, and the common *Snowflake* with blooms very small. The *Bee* and *Fly Orchises* are given; these were just the same in 1660 as now. Next come *Lilies*, all very small, a typical bloom is 1½ inch in diameter. A prolific and very double *Colchicum* is given. Of *Cyclamens*, the largest blooms are only ¾ inch across; but *Violets* were then as now, if we except the few forms to which florists have given attention. The *Polyanthus* has improved but little; they are now a little larger, certainly. No gold-edged form is given. *Primroses* are illustrated in considerable variety of colour, with the *Hose-in-Hose* and other forms. *Ophrys* and *Cypripedium calceolus* are the same as now, the latter is

named in the index *Cypripedium calceola-maria*, the last word being only understood in modern nomenclature. Sweet Peas are exceedingly small; the *Columbine* much as now, but a little less in size. The drawings of *Convolvuli* are failures. *Poppies* are well illustrated, and the fringed forms given, but the largest bloom is under 2½ inches in diameter. The *Scabious* is much as now. One remarkable prolific example is illustrated with five flower stems and foliage starting from the centre of the disc. *Lupinus* are very small, the longest spikes of bloom being under 3 inches. The drawings of *Centaureas* are failures. *Passion-flowers* are poorly done, with the bracts, &c., omitted. Drawings of *Canna* are given, but the spikes are only 3 and 3½ inches high. The common garden *Antirrhinum* is represented with small blooms, and with only from four to five flowers on a stem. A very double yellow *Crocus* is given, with eighteen petals visible on the side view. Strange to say, the *Carnations* are almost as large as now; whilst the heads of blooms in the *Sweet William* only measure 2½ inches across in the largest examples. *Larkspurs* are very small, blooms only 1 inch in diameter; and *Hollyhocks* only carry from six to nine small blooms. A great number of *Roses* are illustrated, single and double, but the largest blooms are only a little over 2 inches in diameter.

The drawings vary greatly in quality; a deep purple *Allium* is a singular and hopeless failure. The drawings appear to represent all examples as life-size; this seems proved by the foliage, and by many plants being shown as exactly the same in size as they are now.

It will be seen from the remarks here printed that this album is well worthy of close study, not as an artistic production for imitation, but as a record of what gardeners have done for certain garden flowers in about 240 years. Every illustration of some sections, as in the *Roses*, is highly instructive; and it is not improbable that some varieties of garden flowers, as illustrated in this album, no longer exist in our gardens, whilst it is clear that some florists' "novelties" of recent years were well known to the continental florists of 1660—but to name some of these forms with certainty would take time, and involve a comparison of modern forms with the ancient. These remarks refer to *Roses*, and bulbous and herbaceous plants alike. *W. G. S.*

SOCIETIES.

ROYAL HORTICULTURAL.

FEBRUARY 9.—The Committees of this Society met at the Drill Hall, James Street, Westminster, on Tuesday last, being the second occasion since the beginning of the new year. In anticipation, perhaps, of the Annual General Meeting (see p. 108), which took place in the afternoon, there was a large attendance of the members of committees and of fellows generally. The display was again a most successful one, and there was no lack of interesting exhibits. Apart from the *Orchids*, of which there was a good show, the most extensive exhibit was one of various strains of *Chinese Primroses* from MESSRS. CANNELL & SONS. It almost covered the whole of one of the long centre tables. *Cyclamens* were again exhibited, one of the collectors being from the nurseries of Messrs. H. Low & Co., and another from the establishment of Mr. CHAS. TURNER. Collections of miscellaneous plants and of forced flowers were shown in several instances, and a few of the earliest hardy bulbous plants were exhibited in pots by several nurserymen, and a collection of *Daffodils* by an amateur. First-class Certificates were awarded to *Iris Bakariana* and *Lapageria rosea*, *Warham Court variety*; and a *Violet* named *Amiral Avellan* was recommended an Award of Merit.

Floral Committee.

Present: W. Marshall, Esq. (Chairman), H. B. May, Chas. T. Drury, R. Dean, J. H. Fitt, Robt. Owen, George Stevens, J. F. McLeod, R. B. Lowe, C. J. Salter, J. Jennings, H. J. Jones, H. J. Cuthbert, Thos. Ford, Chas. Jeffries, R. H. Hoze, W. Bain, J. D. Taylor, Chas. E. Pearson, Chas. E. Shea, Chas. Blick, H. Turner, Geo. Paul, J. W. Barr, J. Fraser, E. Beckett, and Jno. Laing.

MESSRS. JNO. LAING & SONS, Forest Hill, London, S.W., exhibited a group of miscellaneous plants, most of them valuable foliage species, and including a nice specimen of *Peperomia arthur Malet*, and a few *Bertolonia* (*Silver Banksian Medal*).

A group of plants staged by Messrs. Jno. Peen & Sons, Rompell Park Nurseries, Norwood Road, contained some capably flowered double *Deutzias*, *Roman Hyacinths*, *Cyclamens*, *Lily of the Valley*, a winter-flowering *Begonia*, &c., which considerably brightened the *Dracenas* and other fine foliage species of which the group was composed (*Silver Flora Medal*).

Mr. THOS. S. WAAS, Hale Farm Nurseries, Tottenham, made an exhibit of species of *Snowdrops* (*Galantus*), and *Snowflakes* (*Leucojum*). Various *Iris*es also, including *Iris histrioides*, *I. reticulata*, *parviflora*, *I. Bakeriana*, *Prinula obconica*, *Veltheimia viridifolia*, and a few other hardy plants in flower (*Bronze Banksian Medal*).

Mr. GEO. WYTHES, gardener to Earl Percy, Syon House, Brentford, exhibited a group of forced plants, including a number of plants of *Staphylea trifolia*, and a few double-flowered *Deutzias*, *Hyacinths*, *Lilies of the Valley*, *Asclepias mollis*, *Palms*, &c. (*Silver Banksian Medal*).

MESSRS. BAUS & SOSS, King Street, Covent Garden, exhibited collections of several species of hardy flowers, and others in pots. *Scilla biflora*, *Iris reticulata*, *I. Krelagei*, *Galanthus Elwesii* and *G. Ikarie*, a few *Colchicums*, *Narcissus minimus*, *N. mopifolius*, *Leucojum*, &c.

PRIMULAS were shown by Messrs. HENRY LOW & CO., Bush Hill Park Nurseries, Epsom, Surrey, Mr. M. T. COOPER, of Slough, both establishments being represented by groups of plants of a good strain. *Silver Flora Medal* was awarded in either case.

Mr. JESSE WILLARD, gr. to the Baroness BOROETH COETZ, Holbar Lodge, Highgate, was the exhibitor of half a dozen excellent plants in flower of the popular winter-flowering fibrous-rooted *Begonia Gloire de Sceaux*. These were of considerable proportions, and grown in 8-in. pots.

Seedling plants of *Azalea mollis* were displayed by Messrs. B. S. WILLIAMS & SON, Victoria Nurseries, Upper Holloway, who had half-a-dozen good specimens in flower, the blooms representing in each case a pleasing tint of colour (*Bronze Flora Medal*).

PRIMULAS were shown by Messrs. H. CANNELL & SONS, Swanley, Kent, who had a very large collection of showy plants of first-rate value, a *Silver-gilt Flora Medal* was awarded. A conspicuous place was given to several strains that have arisen as a result from crossing with the type known as "The Lady," such as *Prinula pyramidalis grandiflora striata*, which has striped flowers upon a white ground; *C. pyramidalis alba*, *P. lutea alba nigrofolia*, which has yellowish flowers; *Pink Lady*, and *P. rotundifolia* (one of the best of the best of the best). There were also strains, and their derivative value, was frequently remarked at the meeting. The large flowered (*fortis*) *Primulas* were also well represented by large groups of particular varieties, of which the following are a few: *My Favorite* (*pink*), a capital flower in this section; *Her Majesty*, white; *Eynford* (*very good*); *Swanley Blue*, a good strain; *White Perfection*, *Eynford Purple*; *Delicata*, very pretty pale pink; *Swanley Giant*, *Cannell's Pink*, and *Cannell's White*.

Mr. ROBT. OWEN, Castle Hill Nurseries, Midsized, showed a few plants of a *Chinese Primula*, called *Owen's Double Blue*, having pale bluish flowers, and Mr. J. CROOK, gr. at Ford Abbey, Chard, sent *Violets* and *Primroses*.

E. PURNELL, Esq., Woodlands, Streatham, exhibited a group of *Daffodils*, in pots, and was awarded a *Bronze Banksian Medal*.

MESSRS. T. CHAPPEL & SONS, Treadridge Wells, showed a *Marbled Bell Row*, described as a white one, but the colour of the flowers was not pure; also a number of plants of a very sweet purple-flowered violet named *Amiral Avellan*, which was recommended an Award of Merit.

C. J. LUCAS, Esq., Warham Court, Horsesham (gr. Mr. DUNCAN), exhibited a capital flower of *Lapageria rosea*, *Warham Court variety*. It is a fine form of this popular and useful climbing plant, the flowers being very large, fleshy, and the habit of the plant extremely floriferous (*First-class Certificate*).

A *Clevis* with variegated foliage, named *C. aurea striata*, was shown by Messrs. JNO. LAING & SONS, Forest Hill Nurseries, London, S.W.; and Messrs. JAS. VEITCH & SONS, Royal Exotic Nurseries, King's Road, Chelsea, exhibited fine specimens of the profusely flowered, useful, and showy shrubby *Spirea*, *S. confusa*; also *Rhodora canadensis*, a very old inhabitant of our gardens, producing small blue-purple flowers, very similar to those of *Rhododendrons*, and several other blossoms of varieties of their hybrid *Rhododendrons*.

Mr. G. TAYLOR, gr. to Sir J. W. RAMBEN, Bt., Hyam, Ferrybridge, showed spathes of some seedling *Richardias*; and Sir THOMAS LAWRENCE, Bt., again displayed a few handsome varieties of hybrid *Richardias*.

MESSRS. R. WALLACE & CO., Colchester, exhibited five of the very pretty spring-flowering *Frises*, including *fris histrioides*, *I. reticulata* var. *Krelagei*, *I. histrioides* (see fig. 29, p. 165), and *I. Bakariana*. A *First-class Certificate* was recom-

meaded the last named, which is certainly one of the prettiest of them. It was figured in the *Gardener's Chronicle*, March 8, 1890, p. 295, and we now repeat the cut on p. 103. It is a native of Armenia, and has been described by Prof. Michael Foster, in the *Gardener's Chronicle* all elsewhere, as being very variable, both in the size and tint of the flowers and in the period of flowering. The blooms are from two to three inches across. The margin of the calyx is yellow, and the other portion being pale or whitish-yellow with violet blotches. The standards are blue.

Various specimens of preserved flowers and sprays of foliage were exhibited by the FLORAL PRESERVATION CO., 11, Coleman St., London. The system appears to be a very convenient and effective one. Sprays of Asparagus and other foliage plants, that had been cut and preserved for some months, presented a very fresh and natural appearance, and not glazed like some preserved specimens we have seen. The system, if adopted extensively, would appear to be capable of providing an abundance of cheap, decorative material for all seasons. Messrs. Youso & Co., Stevenage Nurseries, exhibited a group of Lilies of the Valley.

Orchid Committee.

Present: Sydney Courtauld, Esq. (in the chair), and Messrs. J. A. O'Brien (Hon. Sec.), De B. Crawshaw, Norman C. Cookson, E. Hill, J. Jacques, H. Bullantini, E. Ashworth, John T. Gabriel, J. H. M. Van Gen. The following were present: The Hon. J. Chapman, W. H. Young, T. W. Bond, Chas. Winn, J. Douglas, J. Gurney Fowler, and T. B. Hayward.

A great number of plants were entered to go before the Committee, but only five secured Awards of Merit, and not one was deemed worthy of a First-class Certificate.

As usual, the groups staged by Messrs. J. A. O'Brien and Mr. J. H. M. Van Gen. formed the chief feature, and if in them there were few plants which the expert considered remarkable, the great variety of ordinary showy species was attractive enough to the majority of the visitors. The group staged by Messrs. JAS. VETHEL & SONS, Royal Exotic Nursery, King's Road, Chelsea, which was awarded a Silver Medal, was the most extensive, and contained a very fine and varied selection of plants. Of novelties, *Lælio-Cattleya* × *Violetta* (C. Gaskelliana ♀, L. purpurata ♂) was one of the most showy, the flowers adhering in form more nearly to the *Cattleya*, and in the richness of colouring to the *Lælia*. The sepals and petals are light rose-pink, the petals being darker at the base, marked with red-brown; the front lobe purple, shaded with violet and margined with lavender colour. (Award of Merit.) Another pretty hybrid, which also secured an Award of Merit, was *Phalaenopsis Hebe* (rosæa × *Sanderiana*), which somewhat resembled a large *P.* in its tendency to form the upright purple rose petals, but the flowers being very attractive. Other good novelties and showy things, in Messrs. VETHEL'S group were *Cypripedium Leonidas* (villosum × *Leucoum* ♂), in which the petals and lip resembled a large yellow *C.* villosum, and the white dorsal sepal that of *C. Spicerianum*; *Dendrobium Cyclops* elegantissimum (white); *Dendrobium Sanderianum* (white); *Dendrobium candidum*, a noble white and pink form obtained between S. *Sedeni* candidum and S. *esudatum* Wallis; *Dendrobium* × *eucosium* roseum and D. × *eucosium* leucopurum; D. × *Cordelia*, of a delicate blue-white colour; and D. × *Cordeliæ* faveosens, of the colour of D. *apudum* × *Leucoum* roseum; D. subulatum; D. × *Edithæ*, D. *atrobicolorum*, *Platydiplis glaucosa* valida, *Epidendrum* × *delegantium*; a large and varied collection of hybrid *Cypripedium*; some good *Phalaenopsis*, &c.

Messrs. F. SANDER & CO., St. Albans, were awarded a Silver Medal for a good group, in which were *Odontoglossum hystrix nobiliss*, a magnificent variety, superior in size to one recently named "Pittiana," and belonging to the same class; a very fine form of *Cypripedium* insignis montanum, with large and well-formed flowers coloured like *C. nitidum*; some very fine forms of *Cattleya Trianae*, one of which, a pretty blotched petals in the way of *C. B. Bachmansiana* being specially good; a number of plants of the pretty *Platylis* × *Martina*, *Cypripedium* × *Mitens Leucoum*, a distinct hybrid; C. × *Heurt* Van den Straeten, a very handsome and large flower of the colouring of C. *Boxalliana*; a number of forms of *C. ×* *Edithæ*, *C. ×* *atrobicolorum*, *Lycaete Skinneri*; a grand specimen of *Pleurothallis* *Roehli*, with many racemes of its singular purple flowers; *Phalaenopsis Brandtii* (P. *assianicus* × C. × *Vetrichi*), a pretty pink variety; *Dendrobium* (nobile × *Varianum*), with attractive white flowers tinged with rose, and the petals with yellow tinge to the lip; and the new blue *Utricularia* *Forgiana*.

Messrs. LINDEN, Horticulture Internationale, Parc Leopold, Brussels, received a Silver Banksian Medal for a group of grand varieties of *Cattleya Trianae*, to two of which Awards of Merit were given, viz. C. *Imperator*, in which the colouring of the large *labellum* was almost entirely of a dark Trianian purple; and C. *T. eximia*, a noble flower with extraordinary breadth of petal and very finely developed lip, yellow in the tube, the front lobe crimson-purple, with a light margin; both petals and lip being crumpled. Other fine varieties were C. *T. Hædleri*, with a very rich yellow colour on the lip; C. *T. illustris* a splendid dark variety; C. *T. dilecta* and C. *T. princeps*; both good; and C. *T. Miss Lindén*, with white sepals and petals and curiously tinted lip, all the segments being rather narrow.

Messrs. HORTON LOW & CO., Clapton, staged a good group, in which were good specimens of *Dendrobium Hillebrandii*, and other *Dendrobium* of the present season; the very singular *Odontoglossum Valentinei*, a supposed natural hybrid

with yellow flowers, blotched with brown and of very distinct character; *Dendrobium nobile* *Ballianum*, *Lælia anceps* varieties; *Miltosa* *Roehli*, *Angraecum sesquipedale*, &c. (Silver Banksian Medal).

Messrs. B. S. WILLIAMS & SON, Victoria and Paradise Nurseries, Upper Holloway, N., staged a group in which were *Cypripedium Hartmannii* subulatum, C. × *Fitchiana*, C. × *Meirax*, C. × *uticens* and C. × *N. superbum*, C. × *poliolum*, C. × *Williamsianum*, C. × *Sallieri aureum*, C. × *vesicularium superbum*, C. *Boxalli*, C. *villosum*; some good varieties of *Cattleya Trianae*, *Coloquio cristata*, C. *sparsa*, *Lycaste fulvovirens*, L. *Skinneri*, *Platydiplis glaucosa*, *Lælia glauca*, *Odontoglossum Rosei* alatum, and the clear yellow *Oncidium* *hibonæ*.

The Hoible. WALTER ROTHSCHILD, Tri g Park (gr. Mr. E. Hill), showed *Cypripedium Euid* (bellatulum ♀, Spicerianum ♂), a singular cross made at Tring Park. In form it much resembles C. × *Marshallianum*. The upper sepal is white closely dotted with dark purple; the deflexed petals yellowish with numerous small purple spots almost covering their surface; the lip greenish tinged and spotted with purple.

NATHAN C. COOKSON, Esq., Wylton, Northumberland (gr. Mr. Wm. Murray), again showed *Dendrobium Keubli* (McCarthy ♀, Benschow ♂), which had previously received an Award of Merit. The sepals and petals were similar in form, about 2 inches in length, and cream-white; the lip exhibited traces of the shovel-shaped lip of D. McCarthy, and like that approached in length to the other segments. Its colour cream-white, with a pubescent, purple veining on the disc—a very singular and striking hybrid.

THOS. STATTER, Esq., Stand Hill, Whitefield, Manchester (gr. Mr. B. Johnson), showed *Cypripedium Rolfei* (reputed parentage *bellatulum* × *B. schiedianum*), which the Committee considered more probably *C. bellatulum* × *insigne* var., or *Leucoum*, or some other insigne. At all events it is a very fine, striking, and distinct hybrid, the reddish downy *labellum* bearing some little resemblance to C. *Rothschildianum*. The upper sepal was white, with many purple spots; the petals blue downwards, yellow, with a purple tinge and stripes. Mr. Statter also showed C. *Rubens* (bellatulum × *callosum*), a very richly-coloured purplish flower; the fine C. *triumphans* (Sallieri *Hyacinthum* × *esumbatum* superbum); and C. *villosum* *gigantum*.

WILLIAM ASHWORTH, Esq., Harefield Hill, Wilmshod, Cheshire (gr. Mr. H. Holtrop), showed *Cattleya Trianae*, "Miss Beatrice Ashworth," a charming flower of the C. *T. Bachmansiana* class, and with a glowing Trianian purple tinge to the lip, and rather on the petals.

WILLIAMS S. ELLIS, Esq., Hoxochome, Dorset, sent the pretty large purple *Epidendrum* *Ellisi*, *Lycaste gigantea* var. the very fine *Odontoglossum Martyanum* *Ellisi* variety; and *Lælia glauca*.

FRANZ LEA BRANDT, Brunnhof, Hiesbach, Zurich (gr. Mr. Schlecht), sent *Lælia rosea* *Kienastiana*, a very handsome variety, in which the front lobe of the lip and the edges of the middle lobe are of a bright dark rose colour (Award of Merit), the singular *Oncidium chrysotriptum*, *Oncidium cirtosum* variety; *Lycaste plana*, *Maessiana*, *Chondrorhyncha* *Chestertonii*, and some species of *Phalaenopsis*.

W. H. APPLETON, Esq., Tyd-P-Cod, Weston-super-mare, showed *Cypripedium Gybes* (Ourtisi × Hookeri), C. *tesellatum* Appleton's var. (concolor × *barbatum* Warner).

REGINALD YOUNG, Esq., Liverpool (gr. Mr. Poynter), sent *Cypripedium insigne* *Youngiæ*, a very pretty, singularly-spotted variety; C. × *Læchis* and other *Cypripediums*. Mr. JAS. CYRUS, Cheltenham, showed a grand specimen of *Dendrobium* × *Ainsworthi* *Cypher*'s var., and a fine D. *splendissimum* *grandiflorum* with growths about 4ft. high, and for each of which plants Cultural Commendations were awarded.

Messrs. HEATH & SON, Cheltenham, sent *Dendrobium nobile* *Heathii*, fine in form and bright in colour.

G. W. LAW-SCHROEDER, Esq., Rawtinstall, Manchester (gr. Mr. Shill), sent flower of a fine D. × *Schneideriana* (gr. Mr. W. SWINBURNE, Esq., Corndon Hall, Winchcombe (gr. Mr. Rendell), sent *Cypripedium* × *M. E. Curtis*, *Gleichen* var., a very richly-coloured; *Odontoglossum* *Hallii* (Swinburn's var.), a very handsome form of the *leucoglossum* class; C. *villosum* *gigantum* and C. *Swinburni* *magnificum*.

The Right Honble. JOSEPH CHAMBERLAIN, Highbury, Moor Green, Birmingham (gr. Mr. Burberry), sent *Dendrobium Barbaryanum* × *Pittiana* × *Finlaysonianum*, a very showy hybrid with the flowers tinted carmine-crimson; and D. *saureum* G., *splendissimum* *grandiflorum* ♀, and which still retained much of the character of the female parent.

Fruit Committee.

Present: Philip Crowley, Esq. (in the chair), and Messrs. G. W. Cunnings, T. J. Saltmarsh, A. H. Pearson, Jas. H. Veitch, J. Cheal, J. Wright, A. Dean, W. Pope, C. Herrin, W. Farr, J. W. Bates, G. Reynolds, G. H. Sage, Geo. Wythes, H. Bidson, J. Willard, F. Q. Luo, Jas. Smith, G. Norman, Robt. Fife, Geo. Buyard, and T. Francis Rivers.

The competition for prizes in the classes for favour in Apple and Pear was very close. On the latter occasion the Apple adjudged best was Blenheim Pippin, shown by Mr. W. H. DIVERS, gr. to the Duke of Rutland, Belvoir, Grantham. The fruits were from a standard tree on free stock, grown upon strong clay in Lincolnshire. Scarlet Nonpareil, shown by Mr. H. HUDSON, Gomersbury House, Gages, Acton, was 2nd. The fruits were from an orchard standard, upon the crab stock, in light loamy soil in Middlesex.

The best Pear was Passe Crassane shown by ROGEE LEONARD, Esq., Barbain Court, Maidstone (gr. Mr. Geo. Woodcock). The fruits were gathered from a west wall, from a tree on the Quince stock grown in rich light loam. The specimens were capital for the month of February, and it is a very juicy, agreeable fruit.

Fourteen excellent fruits of the Lemon were shown by Major THORNTON, Stanton Hall, Fakenhall (gr. Mr. Harvey), and represented most successful cultivation (Cultural Commendation).

Messrs. T. F. RIVERS & SON, Sawbridgecourt Nurseries, Herts, exhibited fruits of an Apple named Prince Edward, a medium-sized fruit, yellow striped with red, apparently a very agreeable fruit (Award of Merit). Also fruits of a conical-shaped red-coloured Apple named St. Martin, certificated last autumn. Messrs. Rivers also exhibited a collection of dishes of Apples, representing some valuable other varieties in capital condition. Orange fruits of the following varieties were also shown: St. Michaels, Egg Orange, Bittercourt, Tangier, Maltese, Blood, Dulcis, Dono Louise, and Bijou Lemon (Silver Knightian Medal).

A collection of sixty dishes of Apples and a few Peas was shown by Messrs. CHEAL & SONS, Lowfield Nursery, Crawley, Sussex. Some excellent specimens were noticed of King of the Pippins, Newton Wonder, Jubilee, Peas Pool, Beauty of Kent, Warner's King, Prince Albert, Cox's Orange Pippin, and others (Silver gilt Knightian Medal).

A collection of some varieties of Potato tubers was shown by Messrs. YOUNG & DOBSON, Stevinge, Herts.

DEVON AND EXETER GARDENERS' ASSOCIATION.

FEBRUARY 3.—The fortnightly meeting of this Association was held on Wednesday evening, in the Guildhall, when there was a very good attendance. Mr. J. ABRAMS, gardener to Mr. T. Kikewich, Peamore, occupied the chair. The essayist for the evening was Mr. J. MAYNE, gardener to the Hon. Mark Rolle, Bickton. The paper was of considerable merit, and dealt with the matter under consideration in a very practical manner.

The paper dealt with the forcing of Seakale, Asparagus, and other vegetables. The subject-matter of the various essays on the kinds of vegetables commonly forced in English gardens was excellent of its kind, and was conveyed in terms well understood by the audience. Of varieties of Potatos recommended by Mr. Mayne, were Old Ashleaf, Vetches, Myatt's, and Rivers' Sharpe's Victor and Early Neptune. Mr. Plus Ultra and Canadian Wonder French Beans were advised for forcing the first for early and the latter for late supplies. Parisian Forcing and Sutton's Early Gem were spoken of as being capital forcing varieties of Carrot.

The discussion which followed the reading of the paper was of much interest, several members giving interesting experiences as to methods of culture in forcing vegetables generally.

Obituary.

BARON CONSTANTIN ETTINGSHAUSEN.—The death is announced from Graz of Baron Constantin Ettinghausen, the paleontologist and botanist, at the age of seventy-one. Deceased was originally a doctor of medicine, but devoted all his time and energies to botany and paleontology. In 1876 he was summoned to London to prepare a paleontological collection at South Kensington Museum. Subsequently he was repeatedly here re-arranging collections in the British Museum. He was the author of several works on botanical subjects, and wrote a large number of papers, which were published in the *Proceedings of the Royal Society*, and of other learned bodies.

HENRY BOSWELL.—The death occurred on Thursday, February 4, at Headington, near Oxford, of Mr. Henry Boswell, the eminent bryologist. The deceased gentleman had not only studied the mosses of Britain, but had an intimate acquaintance with foreign species, and his knowledge was utilised by many correspondents in different parts of the world. In his early days his attention was directed to the study of flowering plants, but subsequently he developed a greater fondness for the study of bryology. He possessed a large collection of mosses, which it is hoped will be secured by the University. In recognition of his services to bryological science, Oxford University in 1887 conferred upon him the honorary degree of Master of Arts.

FOSTER-MELLIAR.—On February 3, at Sproughton Rectory, near Ipswich, Catherine Lucretia, the wife of the Rev. A. Foster-Melliar, Rector of Sproughton.

TRADE NOTICE.

We are informed by Mr. Albert F. Upstone that he has taken over the business of garden and agricultural seedsmen, carried on formerly by Messrs. Cobbau & Son, Market Place, Rotherham. Mr. Upstone was formerly in the services of Messrs. Daniels Brothers, of Norwich, and Messrs. J. Veitch & Sons, of Chelsea.

ENQUIRY.

"He that questioneth much shall learn much."—BACON.

CATTLE-FLY.—Would some of your Orchidist correspondents kindly inform "W. McH." what time elapses from the laying of the egg to the appearance of the grub?

THE WEATHER.

[The term "accumulated temperature" indicates the aggregate amount, as well as the duration, of degrees of temperature above or below 42° Fahr. for the period named; and this combined result is expressed in Day-degrees—a "Day-degree" signifying 1° continued for twenty-four hours, or any other number of degrees for an inversely proportional number of hours.]

Table with columns: DIRECTION, TEMPERATURE, RAINFALL, BRIGHT SUN, ACCUMULATED, and various weather metrics for different regions.

The districts indicated by number in the first column are the following:— 0, Scotland; 1, Principal Wheat-producing Districts—1, Scotland, E.; 2, England, W.E.; 3, England, E.; 4, Midland Counties; 5, England, including London, S.; Principal Grain, &c., Districts—6, Scotland, W.; 7, England, N.W.; 8, England, S.W.; 9, Ireland, N.; 10, Ireland, S.; *Channel Islands.

MARKETS.

COVENT GARDEN, FEBRUARY 11.

Table listing market prices for various goods including Anemone, Arums, Bouvardias, Carnations, Chrysanthemums, Eucharis, Lilium Harris, Lily of the Valley, Maidenhair Fern, Marguerites, Mignonette, Narcissus, and Orchid-bloom in variety.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

Table listing prices for plants in pots such as Adiantum, Aspidistra, Azaleas, Chrysanthemums, Clivias, Cyclamen, Daffodils, Dracenas, Euphorbia, and Erica.

FRUIT.—AVERAGE WHOLESALE PRICES.

Table listing prices for fruit including Apples, Grapes, and various other varieties.

VEGETABLES.—AVERAGE WHOLESALE PRICES.

Table listing prices for vegetables such as Artichokes, Asparagus, Beans, Cauliflowers, Cucumber, and Potatoes.

POTATOS.

During the past week there have been larger arrivals, and with milder weather prevailing, prices for all but finest quality have a downward tendency. Dunbar Maincrop, 55s. to 90s.; Dunbar Saxons, 70s. to 75s.; Lincoln Maincrop, 55s. to 75s.; do Saxons, 50s. to 70s.; do Glants, 50s. to 60s.; Blackheads, 35s. to 40s. John Bar.

NOTICES TO CORRESPONDENTS.

ASSESSMENT OF NURSERIES, ORCHARDS, MARKET GARDENS, &c.: G. B. E. and F. P. Only England and Wales are named as the countries to which the Act of 1896 applies. See p. 708 of present issue.

CARNATIONS FOR CERTIFICATE: E. M. There are two generally recognised authorities whose Certificates carry more weight than any others, viz, that of the National Carnation and Pink Society and the Royal Horticultural Society. The Secretary of the first is Mr. J. Douglas, Park Side, Ilford; and of the latter, Rev. W. Wilks, 117, Victoria Street, Westminster, S.W. It is always regarded as an advantage if plants in bloom be shown, not merely cut blooms.

CORRECTION: PARENTAGE OF ROSES, p. 96, Gardeners' Chronicle, February 6. Through inadvertence, the signature was printed David R. Wilkinson; it should have been David R. Williamson.

GARDENERS' RELIEF SOCIETIES: P. F. L. There are no societies established with the sole or secondary object of assisting gardeners when out of work. The United Horticultural Benefit and Provident Society, Secretary Mr. W. Collins, 9, Martindale Road, Ballian, S.W., affords relief to members during illness, and may occasionally assist gardeners at other times. There are, we imagine, too many projects in the field this year already for a new one to stand any chance of finding supporters; but in any case there would be no harm done by pointing out the need for some such society.

MILDEN ON VINES: Fruit-grower. Maintain the vine-border in an equally moist condition till the autumn, never letting it get dry. Remove all plants from the vicinity of the vinery that usually harbour mildew; let the air be warm and buoyant, as opposed to close, humid, and cool, which may

easily be done if the vinery is heated, and the mildew may give no trouble this year. Keep a lot of shallow saucers in the house constantly, filling them from time to time with a mixture of sulphur and water; also, smear the heating apparatus with a wash of quinine and sulphur. Be careful in affording front ventilation.

NAME OF FRUIT: T. H. Probably, Annie Elizabeth.

NAMES OF PLANTS: Correspondents not answered in this issue are requested to be so good as to consult the following number.—J. W. McH. Gladiolus gracilis, Jaeg.—J. T. L. Belfast. 1, Dendrobium chrysanthum; 2, D. primum (with Primrose-coloured lip); 3, D. crassiole Barbodiaum; 4, send when in flower.

NURSERIES CLERKS: A. C. We know of no book that indicates the precise duties of a nurseryman's clerk. In a nursery, as in other businesses, there are ledger, invoice, and correspondence clerks, cashiers, and ordinary book-keepers. In fact, the only difference between such clerks and those engaged in other trades is, that where possible, the former have some knowledge of the nursery or seed trade before engagement in the office.

PROPAGATION OF TREE PEONIES: Amator. The method you name, that of grafting upon the fleshy roots of herbaceous species (P. albidora and P. officinalis preferably), is a good one, and is frequently practised. This operation should be done about August. The scion should be made from a strong, moderately short shoot, which has no flower-buds, and be set upon a piece of root. Some operators choose one style of grafting, others another; but either of the veneer, cleft, or saddle methods will answer. The rootstock should then be potted and plunged in a frame, where they will not become frozen. Cover the scion up a little way. Only the frame closed, and apply a slight shading. Union will soon take place, but the plants may remain undisturbed till spring. Tree Peonies may also be propagated by layers, eyes with growing leaf, and occasionally by division.

RAFFLESIA SOBADENHROII, WEIGHT OF: P. F. L. We have no record of the weight of a flower of Rafflesia Schadenbergii, but it is stated that Dr. Arnold, in company with Sir Stamford and Lady Raffles, lighted upon a flower of the species, named in their honour, Rafflesia Arnoldi, which weighed 15 lb. The genus, with one or two allies, is now comprised in the family Rafflesiaceae.

RED CURRANT STRUCK FROM EYES: R. A. It could doubtless be readily done in early spring by the aid of a little warnt, say, 55° to 60°. Sandy loam would be a good kind of soil to use, as it does not favour decay.

THE LOWEST TEMPERATURE IN THE BRITISH ISLES IN THE LAST TWENTY YEARS: J. S. Od January 17, 1881, the temperature fell to -16° Fahr. at Kelso, at Stobo to -15°, and Melrose to -10°. On January 26 same year the cold registered at Haydon Bridge was -6° at Sorrel Sykes -9°. The winter of 1894-95 afforded instances of very low temperatures, but in no instance, that we know of, were they as low as these.

ULSTER SHOW GROUP OF PLANTS, Gardeners' Chronicle for January 23, p. 63, for Mr. McKinnon, read Mr. McKinn.

VINE BEETLES: W. McH. We know of no better method than to catch them on white cloths spread underneath the plants, after scaring them with a sudden burst of light from a dark lantern.

COMMUNICATIONS RECEIVED.—D. J. H. V.—Canon E.—W. W.—Hurst & Son.—M. Naudin, Antilles.—A. J. L.—W. W.—D. G. M.—T. W. R.—D. T. F. J. Payne.—A. E.—F. K. Kent.—E. A. H.—F. K. Berlin.—W. A. C.—W. R.—L. G.—J. D.—W. K.—T. C.—C.—T. & S.—H. T. M.—C. R.—Dr. Motterdale.—E. C.—E. C., Brixton, E. N. Hooper.

SPECIMENS, PHOTOGRAPHS, &c., RECEIVED WITH THANKS.—R. J. L.—R. N. H.

CONTINUED LARGE INCREASE IN THE CIRCULATION OF THE "GARDENERS' CHRONICLE." IMPORTANT TO ADVERTISERS.—The Publisher has the satisfaction of announcing that the circulation of the "Gardeners' Chronicle" has, since the reduction in the price of the paper, increased to the extent of more than 90 per cent., and that it continues to increase weekly. Advertisers are reminded that the "Chronicle" circulates among country gentlemen, and all classes of gardeners and garden-lovers at home, and that it secures a large foreign and colonial circulation, and that it is preserved for reference in all the principal libraries.



THE Gardeners' Chronicle.

SATURDAY, FEBRUARY 20, 1897.

GARDENING AND ARCHITECTURE.

MR. H. E. MILNER, F.L.S., Assoc.M.Inst., C.E., read a paper on Monday evening last before the Royal Institute of British Architects, on the subject of "The Garden in Relation to the House." Professor Aitcheson presided, and there was a good attendance, including the Hon. Alicia Amherst (the author of *A History of Gardening*), Mr. Aston Webb, Mr. H. H. Stabam, Col. Prendergast, &c.

Mr. Milner in his paper said that he proposed to speak of the treatment to be adopted in laying out grounds, particularly in their more immediate relation to the house, and to indicate generally a practical application of the theories advanced.

The formal treatment of gardens reached a high state of perfection under Elizabeth, when the architect who designed the house also laid out the garden, with its forecourt and broad terrace, its straight walks leading from it encompassing the flower-beds, and all harmonizing with the building. Little thought, however, was devoted to the treatment of the country outside beyond the planting of avenues.

Towards the end of the eighteenth century, fashion ruled the destruction of most of the old formal gardens, to be replaced in very many instances by a no less artificial and formal imitation of nature. The designers were not content with amalgamating with whatever was good of the old work a natural treatment of the outlying ground, or of giving greater breadth to the existing formal work, but swept away all this and replaced it by meaningless walks, by clumps of trees and shrubs dotted irregularly on the lawn and park, by a boundary of planting, by imitation of bits of natural scenery, by the introduction of artificial ruins and such-like objects, with the desire of making a picturesque landscape. The author then went on to speak of the happy mean between the formal and the picturesque treatment.

He differentiated greatly between the treatment of terraces, walls, steps, balustrades, &c., in stone and verdure. Architects should extend their work in the garden in connection with the building; but this work should go hand in hand with the composition of the greater picture, which the art of landscape gardening should produce.

The increased resources of modern horticulture should be taken into account; not merely the eye but the mind should be appealed to by the beauty of composition of line, colour, perspective, and grandeur; a liberal art should not degenerate into a mechanical one. Places differed in the conformation of the ground, in climate, in soil, in the requirements of the owner, in the amount to be expended, and in the possibility of an extension beyond the immediate precincts. It was, therefore, futile to lay down any hard-and-fast rules for design.

The author then proceeded to treat in detail of the site, the approach, the terrace, and the garden formation and planting.

The approach to a house should always appear to be direct, and any deviation from such directness should not only arise from, but should also be made to arise from, some decided obstacle. By direct was not meant straight. A straight approach required careful treatment. It was artificial in character, it could appropriately be used when an imposing or somewhat pretentious building was at the end of it, or when the distance was short, and when the country was flat. In sloping ground it should, if possible, be made against the slope of a hill. The gradient should be even and flat, or very slightly and continuously curved, otherwise it would appear not straight. If the ground be very undulating, a straight road is out of character with its surroundings.

A curved line of road was generally to be preferred, as being more easy of construction, more varied views could be obtained, its gradient could be varied, following within limitations the natural undulation of the ground; and the side slopes could be more easily and freely dealt with than the sides of a straight drive. Gradients, width of walks and drives, entrances, were here discussed in considerable detail by the author.

The lodge and entrance-gates belong to the drive, and should be parallel with, and at right angles to it, as distinguished from the highway. The face-line of lodge should be at least 10 feet from the edge of the drive, and its windows should be able to command the entrance and a certain length of drive. On entering by the drive it was advisable to create a good impression, and therefore to mark distinctly the difference between the dusty highway and the shaded, well-trimmed drive within the gates. Planting might be introduced on either side of the entrance, but once well inside, a view should be given of the outlying grounds, or stretch of park, or distant wood. A curved drive should not be planted continuously, but broad masses of planting introduced, at first to shut off the highway, at turns in the drive, and on the top or slopes of knolls round which the drive may wind.

The direction and level of the approach, and the character of the architectural features, ruled greatly the plan to be adopted for the treatment next the house.

The treatment of the terrace also depended very much on the architectural character of the building. By "terrace" was meant not only the narrow strip of level ground placed parallel with the house, or the more stately portion—often with architectural adornments—laid out along the face of the structure, but the whole of the ground that formed the base or setting of the building.

Having next discussed the various forms of terraces, the author passed on to the treatment of the garden proper, quoting partly from his book on the subject, which defined the system he advocated. So many considerations press in to vary design in the general plan of a garden, that arbitrary dealing by imposition of what may be termed paper designs, however ingenious, was ill-advised. The detailed plan should spring from the site as an adaptation of its natural, or created natural, features, and should not be forced upon the position, crushing it to an artificial scheme. To copy simply the design of another place is inadmissible. Considerations that rule in this connection were almost infinite—extent, geological formation, soil, existing

natural formation or features, climate and aspect, the display of distant beauty, conformity to outside influences, particularly to the requirements of the possessor, and the expenditure of money that may be made. There were points of similitude between the painter's art and landscape-gardening; but the landscape-gardener must consider that his colours change and grow—he must realise as he creates his picture that in a few years what now seems like a light green stroke of pigment to the painter may have become a tall tree, beautiful in itself, but of altered beauty, either helping or marring the landscape. He must follow Nature by adapting or garnering her beauties, and tutoring her, so to speak, to a display of them. But by following Nature was not meant a slavish imitation or reproduction of any of her particular scenes. Some were unattractive, some very inappropriate—all were subject to dissimilar conditions; and imitation in Nature as well as in art produced pettiness. But the spirit of the beauty of Nature, embodied, as it were, in those of her works or features that express her majesty, simplicity, peacefulness, sweetness, repose, refinement, strength, and variety in form, colour, abundance, or any of her modifications as parts of loveliness, should be included and brought into juxtaposition in an ideal scene so far as it was possible to promote its natural development.

The terrace, the region immediately next the house, and the general arrangement of the walks and gardens, having been discussed, the author next dealt with the most suitable positions for planting trees and shrubs, principles of grouping, the effect of colour on distance, character of foliage, &c. He maintained that they should carry out in the parts surrounding the house the architectural feeling of the design in terraces, walls, steps, basins, beds, and so form a base; that they could still have the dignified and quiet delight of formal work—not a narrow curtailment of the whole design. But there was in addition a broader treatment beyond—a work difficult to proportion in relation to foreground, to broad lawn-spaces, to grouping, and choosing trees and shrubs for effect in size and colour, to directing the eye to desired points, to taking advantage of climate and character of the place either natural or acquired, to provision of light and shade in the undulation of the ground, and to a knowledge of horticulture. This art-gardening was far beyond the limitations of formal work only, for it could apply the balance and proportion of the latter, and, in addition, present a noble conception of art-work, in its execution of outline, surface-formation, and grouping, and draw into the picture the greater, broader, varied landscape.

In the discussion which followed,

The Hon. ALICIA AMHERST said she had listened with the greatest interest to the reading of the paper, and that she entirely agreed with all the writer had said. She thought with Mr. Milner that the garden should be laid out as much as possible to coincide with the architecture of the house, a rule which was being recognised by designer more and more every day. This fact ought certainly to be taken into consideration when new gardens were being made.

MR. ASTON WEBB proposed a vote of thanks to Mr. Milner for his paper, which he said was full of the most useful and valuable information, combined with practical details, and which, when printed, would make a most interesting chapter among the many interesting papers they had already heard. At their last meeting they listened to an hon. associate who was a sculptor, and that night they had experienced the pleasure of listening to an hon. associate who had dealt

with an equally interesting subject. It would be impossible to choose a more delightful subject than that of gardening. The first paradise on this earth was in a garden, and although that garden was not altogether a success, partly owing to what was planted in it, and partly to the people who resided there; still, at the present time no place was more charming than a beautiful garden on a summer's day. But the most delightful garden was incomplete without the house, just the same as a beautiful country house was incomplete without a beautiful garden surrounding it. Therefore it seemed to him that the two should go hand in hand from the very commencement. If he might say so, speaking to brother architects, it seemed to him most desirable that when they were building a house they should call in the gardener and discuss matters with him—the way he proposed to enter the house, and how he proposed to lay out the various buildings—before they put a stick on the ground, or even before they put a line on paper. That he considered was a most desirable, and, indeed, essential thing to do. The question whether the garden should be formal or otherwise, of course, interested architects, not only at the present day, as some people thought, but, as Mr. Milner had said, in the days of Elizabeth. He could not help thinking that the word "formal" in respect to gardening had been rather overdone, and very much misunderstood, not so much amongst architects but amongst their clients, the public. The formal garden, he took it, that they were striving for, and hoping to see more generally adopted, was the formal garden of England, and not that of Holland—although he had not seen many gardens there—or of Italy. They wished for the formal garden of Hampton Court Palace, on the one hand, or the garden at Hatfield House. Of course, the ground area at their disposal must naturally affect all they did. Mr. Milner had mentioned court-yards, and had said that the surrounding walls should be only 3 feet high. Surely he must have meant 10 feet. [MR. MILNER: No.] It seemed to him that in planning a garden there should be a certain sense of "mystery" sought for. The garden should be on the sunny side of the house, and the present Poet Laureate had exactly described what such a garden should be. Mr. Austen had written as delightfully on gardens as anyone in the world, and he hoped they should have more such works from his pen. The Poet Laureate had written—

"Alleys green should lead where none can guess."

That was the mystery to which he referred—paths should lead to some place which was not visible at the outset. A garden should have a good design.

"Msn was designed to design."

A garden which was man's work should bear evidence of that fact, and any attempt at naturalism in the garden itself only led to dissatisfaction.

Mr. STATHAM seconded the vote of thanks. He said we were at present in a sort of reaction in regard to the question of what was a formal and an informal garden. For a long time—perhaps for twenty years past—we had discarded the formal garden as an old-fashioned thing. Now the matter had been revived, and people seemed disposed to go to the other extreme. Mr. Milner had no sympathy with them. He (Mr. Statham) did not think that hedges and trees cut into artificial shapes belonged to the formal garden. Hampton Court garden, as it existed at present, was an ideal specimen of a garden. But Hampton Court garden as it was laid out was a totally different thing. The formal hedges of elaborate designs had been done away with, and any advocate of the extreme formal garden could not but admit that it was far superior, and far more pleasant in its present form. Some people wished to imitate Nature so closely, that, like the poet Shenstone (who made an artificial perspective to his garden), they forget that their handiwork can be looked at from the other end.

Colonel PRENDERGAST said he would like to associate himself with others in saying how greatly he had been interested in Mr. Milner's paper. It was a

subject that touched their Institute more than many people were inclined to admit. Each generation had to meet the great difficulty of making the English home more charming than it was before. Fifty years ago it was the fashion to have a great field right up to the door of the house, and very beautiful that was to a certain extent. At that time a certain great lady, the Duchess of Sutherland, mother of the late Duke, a woman of taste, created an Italian garden at Trentham. She had at her disposal and close at hand the splendours of Minton to draw upon, but that was done away with! The result of all these things was that we had two parties in England. We had the formalist and the free gardener, and the only thing he wished to say about Mr. Milner's paper was that he had fallen into the old-English failing of getting a little between the two. He (the speaker) honestly

He had learnt differently from Mr. Milner's paper, which would prove extremely useful to everyone whose business it was to build houses.

Mr. MILNER, in reply, said what they had to do, was to find the happy mean in this question.

Colonel PRENDERGAST added that the subject of that evening had been greatly neglected, and he agreed that the architect and the landscape-gardener should work in harmony.

NEW OR NOTEWORTHY PLANTS.

POLYSTACHYA PLEISTANTHA, Krzl.*

I RECEIVED A SPIKE and a photograph from Mr. Lauche, Director of the Gardens of Prince Liechtenstein, Eisgrub, Moravia. It is a very strange-looking



FIG. 32.—CRATEGUS CARYOCARPA: GARDEN HYBRID. (SEE P. 119.)

thought that the garden business could only be treated, in our days, by some such process. Of course, his remarks applied to new buildings. The modern method of placing houses on the highest ground, instead of in the valley, had completely changed their notions; and he agreed that the landscape gardener should be called in, in the first instance. In these days of hay-windows the gardener and the architect had an enormous advantage over those of olden times. Instead of keeping to a cut-and-dried plan, what they really wanted to discover was, how the place would look best to those who were to live there.

The CHAIRMAN, in closing the discussion, said they were extremely obliged to Mr. Milner for his admirable paper. He always understood that the landscape gardener looked upon himself as master of the situation, who, if he could really manage it, would leave a small corner of the ground for the house!

plant, the stem is short, and as far as I can judge from the photo, has no tendency to thicken into a pseudo-bulb; the leaves, about seven or eight,

* *Polystachya pleistantha*, Krzl.—Caulis ad 10 cm. alto foliose; foliis distichis? late linearibus acutis ad 40 cm. longis racemos sub anthesi subsequantibus; racemis in specimenne ejus iconem photographice accepti, ad 25, simplicibus multifloris (80–100) bracteis parvis triangulis, rachis, bracteis, ovario quae scabris; sepalis dorsali oblongo obtuso, lateralibus triangulis apice obtusis omnibus extus pubescentibus apicibus incrassatis; petalis liberis oblongo obtusis, lobis lateralibus maximis oblongis subtrapezoidis obtusis, internodiis minuto triangulo reflexo; callo incrassato in basi, limba lata elevata pro disco apicem usque utriusque in limellam margine liberam dilatata, toto disco dense pulveroso; gynostemii parte libera brevi latissima, colorum generis.—Flores extus puberulis luteis purpureo-suffitis et unculatis; sepalis apice incrassata atro-purpurea, lobellum pallide luteum transverso purpureo-striatum; flos expansus ab apice sepalis dorsalis lobellus usque, 1–2 cm., inter sepalorum apices 1 cm. F. Kränzlin.

rise from the very base of it, they are broadly linear, about 30 to 40 cm. long, a length quite unusual in *Polystachya*. The two spikes arise from the axilla of two of the upper leaves; they are perfectly simple, many-flowered (from 80 to 100), and somewhat nodding at the apex. Bracts short, triangular. The flowers have all the peculiarities of true *Polystachyas*, the large side sepals, the small dorsal sepal, and rather narrower petals; the lip also agrees very well with the usual form. The middle lobe is very small, and nearly disappears between the large side-lobes;

—even from *P. purpurea*, Wight. If the statement about the native country be a correct one, *P. pleiostachya* is the most eastern species of this widely-distributed genus. *F. Kränzin*.

CRATEGUS.

(Continued from p. 88.)

C. TANACETIFOLIA (Tansy-leaved Thorn).—A distinct and very beautiful Thorn, with leaves 1 to 1½ inch long, that are cuneate in general outline, but

Levant, and was introduced in 1789. Some of the branches end in a hard sharp point, but these are the only spines on our plants.

Var. glabra.—According to Loudon this is a hybrid between *C. tanacetifolia* and the common Hawthorn, and has shining leaves, and reddish-yellow fruit, only half as large as that of *C. tanacetifolia*.

THE NEW WORLD SPECIES.

C. Carrièrei.—The precise origin of this Thorn is uncertain, but it has, no doubt, been derived from one or more American species—either as a variation or a hybrid (see figs. 2, 33). Mous. Carrière says he raised it from seed of *C. mexicana*, but Surgeon plac-it-direct under *C. Crus-Galli*. It is probably a hybrid in whose parentage that species shares; the other parent, I should judge to be *C. tomentosa*. *C. Lavalléi*, a plant originating in the Segrez Arboretum, is now generally admitted to be the same thing, although the matter was some years ago the source of much controversy. In any case, it is one of the most handsome Thorns, and either for its foliage, flowers, or fruits is worth growing. It has ovate leaves of a dark lustrous green, toothed except at the base, from 2½ to 4 inches long, glabrous above, and pubescent below. It produces its flowers in May, and they are nearly 1 inch across, white, lightly tinged with rose. The fruits (which ripen late, and are then orange-red) are oval, and from ½ to ¾ inch long, with the serrated calyx-lobes at the top, and have a very pleasant flavour.

C. coccinea.—This is a most variable species, and one with which others, particularly *C. mollis* and *C. tomentosa*, have been confounded. It is handsome when in flower, although not so striking at that time as is *C. mollis*. The typical form has leaves that are nearly or quite glabrous, sharply and coarsely toothed, and smaller than those of *C. mollis*. The flowers are half to three-quarters of an inch across, white, with a greenish-yellow ring round the stamens. The fruit in all the forms is bright scarlet, and hangs downwards when ripe, in this respect differing from *C. tomentosa*.

Var. macrantha.—Of the varieties of *C. coccinea* in cultivation in Britain this is the most distinct; it has, indeed, until lately been commonly regarded as a species. It is chiefly remarkable for its numerous sharp spines, which are longer than those of any other *Cratægus*, being usually over 3 inches, and sometimes 4 to 5 inches in length. The leaves have a thicker texture than those of *C. coccinea*, and the bright red fruits are more numerous, if smaller and less fleshy, than in the type. It was exceedingly beautiful during the past autumn. It is a smaller tree, and has a more western distribution in the United States than the typical *C. coccinea*. There are other named varieties in gardens, such as *dentata* and *maxima*, but they do not differ from the type any more than many unnamed forms do.

C. coriata (the Washington Thorn).—This species is distinguished from all the rest in the fact that it flowers later than any, but it is in other respects a distinct species. It is a small tree, said to be nowhere common in a wild state, and reaching in this country a height of 15 to 20 feet. The dark wood is armed with slender straight spines 1½ to 3 inches long. The leaves are of a dark glossy-green above, paler beneath, and glabrous on both surfaces; their outline is somewhat triangular, but they are deeply three to seven-lobed, the lobes coarsely toothed; the blade is 2 to 3 inches long, the petiole about one-third as much. The flowers are small and white, and produced towards the end of June. The fruits are ripe in October, but remain on the tree for several weeks longer; they are of a bright red colour, about one-third of an inch in diameter, and orange-shaped. This is one of the neatest and most pleasing of the American Thorns, and ought to be oftener planted than it is. It was introduced in 1738.

C. Crus-Galli (Cockspar Thorn).—Of all the North American Thorns this is the most variable especially in form of leaf and in habit. It is a particularly handsome tree, flowering and fruiting with great freedom. The leaves are, perhaps, the firmest and



FIG. 33.—FLOWERING SPRAY OF CRATEGUS CARRIÉREI X.

the disc is covered with mealy substance, and in front of the middle lobe is a little plate or lamella, a character which does not occur very often in *Polystachya*. The flowers are purplish-brown, hairy outside, glabrous inside. The points of the sepals are thickened and blackish purple.

It is very difficult to point out the closer affinities of the plant, although by its comparatively thin and excessively rich-flowered spikes of dull-brown flowers, it differs from all *Polystachyas* known to us. It is said to have been introduced from Borneo, but it is widely different from any of the three Indian species

deeply-cut into rectangular lobes, usually numbering five or seven, and irregularly toothed. Both surfaces of the leaf, as well as the young wood, are pubescent. The pure white flowers are amongst the largest in the Thorns, giving the tree a beautiful appearance towards the end of May. The fruit, which is ripe in September, is downy, ¾ to 1 inch in diameter, yellow, and with a pleasant, rather Apple-like flavour; it can always be distinguished from the fruit of other *Cratægus* by having one or more deeply lacinated bracts adhering to the base. This is a small tree, and one of the most desirable of Thorns. It is a native of the

most coriaceous in the genus, being of a deep lustre green, obovate in the typical form and toothed, except at the base, where the blade tapers to two narrow wings running almost to the bottom of the petiole. The flowers appear in June after many of the *Cratægus* are past. The fruits are of large size and of a bright red, ripening late and remaining on the tree far into the winter. The leaves also remain on the tree for a long time, the species being almost evergreen in mild winters and in warm southern localities. Of the named varieties in cultivation, the following differ chiefly in the shape of the leaf: *arutifolia*, *ovalifolia*, and *prunifolia*. Vars. *linearis* and *pyracanthifolia* have narrower, smaller leaves, and the habit of both is peculiar, the branches growing out from the main stem in horizontal directions, and thus forming small, flat-topped trees. Other forms of *C. Crus-Galli* frequently show the same peculiarity, although not perhaps in so marked a way as these two; most of them are of more or less pendulous habit. Var. *berberifolia* (*Cratægus berberifolia* of Torrey and Gray) is the most distinct of the many forms of the Cockspur Thorn. As represented at Kew, it is a small, spreading, flat-topped tree, about 4 feet high. *W. J. Bean*.

(To be continued.)

PLANT NOTES.

GENTIANA STYLOPHORA.

It is probable that this year some seed of this remarkable Himalayan alpine plant will again reach England, and it may therefore be interesting to some of your readers to have my experience about it, particularly as hitherto the idea has prevailed that the seeds lose their germinative power during transit. It is best to prepare a bed in the open, and to sow the seeds as soon as possible. The place should be sheltered, partly shady, and not dry; here they should remain exposed to all weathers, in summer occasionally watered, and kept clean of weeds. After 12 to 15 months they make their appearance in the shape of two cotyledons not much larger than one-eighth of an inch. Great care must now be taken to keep off worms and slugs, which latter are very fond of such precious food; the plants do not grow, but the root only increases. In October or November, when they die down, some slight covering of light soil should be given, and the plants left alone till spring, when the cotyledons will again appear, and be much larger, the little root increasing again. Thus far my experience. I do not know what they may do this year, but I hope they may produce a regular stem. A somewhat peaty soil is preferred. As a rule, *Gentians* germinate very readily, but this one seems to be an exception, and my statement is only intended as a warning not to be too hasty in throwing the seeds away; they may be sown in pans, and kept for a summer, but in autumn the layer of soil in which the seeds are contained should be put outside and left alone. It seems necessary that the seeds should be exposed to cold and frost. My friend, Mr. Elwes, praises the beauty of this fine plant, he having seen it in its native haunts. The flowers are very large, and yellow in colour. *Max Leichtlin, Baden-Baden*. [The re-appearance of the cotyledons is a very remarkable circumstance, and should be attentively watched. Ed.]

ODONTOGLOSSUM CRISPUM.

This is, in all probability, the most popular of all *Orchids* in cultivation. During the past twenty years, the number of plants exported to Europe has averaged not fewer than 100,000 a year, thus 2,000,000. Of course, many thousands perish under cultivation in Europe, and some 25 per cent. are lost in transit. The demand for these plants in Europe is increasing. This year, several great *Orchid* growers have requisitioned 250,000 plants.

Hitherto, this *Orchid* supply has been obtained from the Pacho district, that is, from an area con-

prising some 300 square miles of forest, occupying numerous spurs and ramified ridges of the Eastern Cordillera.

Some fifteen years ago, this *Orchid* was obtainable in the Pacho district for a couple of dollars per 100. Then a peon collector collected as many as 200 a day. Now a peon collects about ten a day; and the price of collection has increased tenfold.

Of the 250,000 desired for Europe this year, it is hardly possible to supply more than a third, and this with strenuous efforts—efforts stimulated by the payment of exorbitant prices. Moreover, the result of these efforts will most seriously exhaust the available supply after the spring of next year.

The vast majority of these *Orchids* grow on trees, and large numbers of trees are cut down annually in order to secure the plants. But many plants are also found growing on the ground—on banks of moss, and on rocks; in general, but not always, under the shade of the forest—that is to say, they are frequently found in places more or less exposed to the sun. Frequently, too, when a clearing is made in the forest by fire, in rocky places, many thousands of plants spring up on these spots on which self-sown seeds require some eight years to become strong plants.

Another circumstance which has materially diminished the resources of the Pacho district, a circumstance that threatens in the near future to exterminate the plant—at any rate, for commercial purposes—is, thousands of acres of forest in which this *Orchid* has been dispersed are yearly cut down for the establishment of pastoral farms—a great industry on these elevated lands. Also, some eight years ago, during an exceptionally prolonged drought, many thousands of acres of forest, on which these plants abounded, were destroyed by fire.

In a state of nature seeds of this *Orchid* are produced in vast abundance. The seeds being extremely minute and light, float in the air. Millions are thus disseminated yearly.

The price of the newly-imported plants in the sale-rooms in London, according to the size of the plant, averages from half-a-crown to half-a-guinea each. It may be anticipated that the price will be augmented owing to the collapse in the supply. It may also be mentioned that special or rare forms of established plants in flower, fetch from two to five, and even ten guineas each. Furthermore, about three per cent. of the plants obtained in the Pacho region consist of peculiar or unique varietal forms. The anticipation of such forthcoming novelties enhance the enthusiasm with which *Orchid* cultivators are inspired.

A few weeks ago I had the pleasure to forward forty plants of this *Orchid* to the Jamaica Botanic Garden for cultivation at the Cinchona plantation. Having resided ten years at that plantation, which was established under my supervision, I am well acquainted with the climatic conditions of the Blue Mountains of Jamaica. The temperature at the Cinchona plantation between 4,000 and 6,000 feet exactly coincides with the temperature at from 8,000 feet to 8,000 feet where *O. crispum* grows (latitude accounts for the difference of temperature equivalent to 2,000 feet). The wet seasons and the dry seasons are exactly similar on the Blue Mountains and on these Cordilleras.

From the upper limit of Coffee cultivation in Jamaica, about 4,500 feet, up to 7,000 feet, there is a very considerable extent of land under forest—a region comparable in extent with the Pacho region. It is impossible to conceive a more eligible tract for the naturalisation of this *Orchid* than is afforded between 4,500 and 7,000 feet in Jamaica. The way in which this enterprise—the naturalisation of this *Orchid* on the Blue Mountains—could be best accomplished would be to establish groups of the *Orchid* at intervals of probably a mile in the forest. Healthy plants tied to the trunks and branches of trees would require no further care. The majority of the plants would flower in about a year. After flowering, seeds mature in a few months. Thus within a couple of years myriads of seeds, by reason of their buoyancy, would be dispersed over the forest.

And it may be confidently predicted that in the course of ten years scores of thousands of plants would be naturalised and fit for export annually.

This *Orchid* thrives on the Cinchona trees, hence some hundreds of it might be established at the Cinchona plantation. Wider scope is afforded for cross fertilisation when a considerable number of plants are under treatment, i.e., large groups embracing varied forms. It would also prove advantageously to grow a small percentage of a few closely-allied species of *Odonatoglossum* in order to induce hybridisation. Thus the Cinchona plantation alone, on the trees and on the rocks, would become a nucleus of production.

It has been mentioned that some 25 per cent. (sometimes far more) of this *Orchid* exported from Colombia perish in transit to Europe. The plants are received from the peon collectors at a height of 7,000 feet above the sea-level. The plants are then packed in cases, carried on mules' or bullocks' backs two days over a lofty, bleak, and dreary ridge of the Andes, 11,500 feet in height, then fifty miles partly in carts and partly in short railways over the great savanna of Bogota, then four days on mules to the river Magdalena, then about a week down that river to Savanilla. Thus a severe ordeal by reason of the violent changes of temperature and the time occupied.

There could be practically no loss by exporting from Jamaica, and the expense attendant upon transit from Jamaica would be comparatively light.

It may not be amiss to refer to a notable example of naturalisation furnished by Jamaica,* by which that island has been enriched to the extent of millions of money, and this by spontaneous production, i.e., Logwood. *Jamaica Bulletin*.

LÆLIO - CATTLEYA × DECIA ALBA (LÆLIA PERRINI ♀, CATTLEYA DOWIANA AUREA ♂).

AMONG the most beautiful and useful of the autumn and winter-flowering hybrid *Orchids* raised by Messrs. Jas. Veitch & Sons, Royal Exotic Nursery, King's Road, Chelsea, are the various crosses made between species of *Cattleyas* and *Lælia Porrhii*, and one of the brightest and richest in colour was *Lælio-Cattleya* × *Decia*, which was shown on several occasions at the Royal Horticultural Society in 1895. But in 1895 out of the same batch Messrs. Veitch & Sons flowered a single plant bearing clear white sepals and petals, and a most delicately-tinted soft rose-pink labellum beautifully veined with silvery-white, and which was adjudged to be the best new hybrid *Orchid* of the year, upon its being exhibited at the Royal Horticultural Society as *Lælio-Cattleya* × *Decia* alba, Nov. 24, 1896, when it received a First-class Certificate. We have much pleasure in giving an illustration (fig. 34) of this unique variety, which being home-raised is doubly interesting as pointing to the manner in which albinos are produced from seeds in a wild state.

THE PRUNING OF FOREST TREES.†

Few things enrich the general appearance of a country, or increase the value of property, more than hedge-row trees, provided they are properly managed; but the training of trees planted in such open situations is seldom or never thought of. To manage this in a proper manner, young trees should be examined from the third year after they are planted, and if any more leading shoots than one are found to exist, the best one should be selected, and the others shortened to one-half the length of the selected shoot. This practice of examining the trees should be continued every year till they are about

* The new *Orchid* (*Platys grandifolius*) is said to have been introduced by Mr. Wiles, whilst in charge of the Botanic Garden at Gordon Town, and it is now very abundant on the higher lands of the interior. [—*Ed. Jamaica Bulletin*.]

† A paper read before the Isle of Wight Horticultural Improvement Association, on Saturday, January 9, 1897, by William Cunningham.

15 feet in height. These shortenings, however (which should not be confined to superfluous leading shoots, but should include any branch which is gaining a disproportionate ascendancy over other branches of the same year's growth), should at first, and even for some time previous to this stage of the growth of the plant, be more cautiously done than is necessary to be observed afterwards, and should increase in severity as the tree approaches to, and after it is 15 feet in height. The process of examining

is of a greater length than the majority of the branches of the same tier, or if the whole are too long, they must be shortened in the case of trees intended for timber, after they are at and above 15 feet in height. This rule of shortening the branches of the new tier must also be applied to the undermost tiers of branches. In this manner all the under branches of any importance will have been shortened, which prepares them for the next operation.

After the trees are about 15 feet in height, the

spreading nature, such as the Oak, Beech, and others; but no branch, wherever it is situated, is to be cut off close to the stem, until such branch has become one of the lowermost tier. In this mode of shortening the branches, it will be seen that the tree will at all times present a head of nearly a conical form, and advantage should also be taken when shortening to reduce such branches, the pruning of which will balance the tree best, and produce the proper shape of the top; but in shortening the branches, too much should

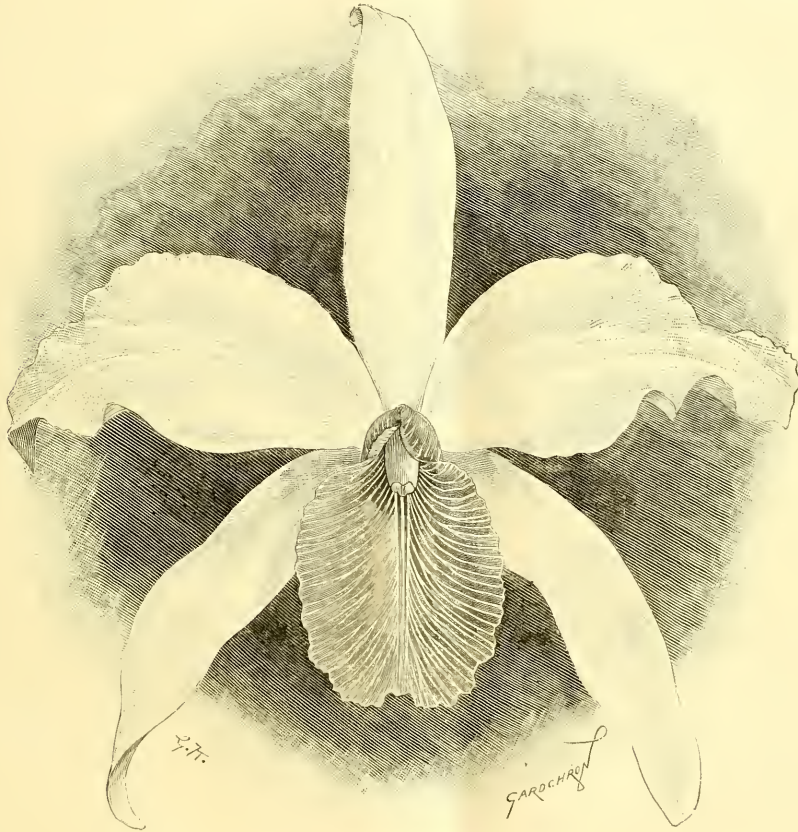


FIG. 34.—LILIO-CATTELEYA × DECIA ALBA; SEGMENTS, WHITE; LIP, 10-E P NK, VEINED WITH SILVER. (SEE P. 120.)

a tree is a simple one; it is done in a moment by the pruner casting his eye over the whole tree, and detecting the branches which require to be shortened, and, as a general rule, when it is found that any branch has a greater growth upon it than the leading shoot, it should be shortened by cutting off as much as will reduce it to half the length of the leading shoot, or even less. By this I mean any branch which is neither of greater thickness generally, nor near its junction with the main stem of the tree than the leading shoot is at the same distance from its top. And as trees produce only one regular tier of branches in each year, any branch should be shortened which

undermost tier of branches only should all be cut off close to the stem in one year. In the subsequent year another tier of branches should, in the same manner, be cut off, and so on every year afterwards, always cutting off only a single tier in one year. The same process of shortening the branches is meanwhile to be continued as before directed, but must be discontinued some years before the cutting of the tiers of branches is discontinued, so as to give a more extended top to the tree. All trees that have naturally conical heads, such as the Willow, Poplar, Larch, Silver and Spruce Fir, require longer heads than those trees that are of a

never be done in one year, nor will it be necessary to do so, provided the trees are attended to in the regular manner I have described.

There may be said to be various sorts or methods of pruning now in practice; e.g., first, close pruning; second, snag pruning; third, fore-shortening; fourth, topping or loughing.

CLOSE PRUNING.

This answers to a certain extent. The operation is performed by cutting the side branches off close to the bole of the tree, and you may expect that the bark and the timber will heal over, and the edges of

the wound become united if this operation is completed when the branches are young, or mere saplings, if the tree is in a vigorous growing state, and a few only of the branches cut off in one season. The object will be obtained without injuring the growth of the tree; but the system, from having been misunderstood, has been misapplied and carried to an alarming extent, doing incalculable injury, not only to individual owners, but to the country at large. Immense numbers of large boughs have been amputated from the trunks of trees, in the vain hope of the timber growing over the wound, and uniting with the stumps of the boughs left in the body of the tree. The bark and sapwood do indeed sometimes grow over such wounds, but the stumps of the branches enclosed go to decay, become a canker in the bole of the tree, and the result is calamitous. It is the ready extension of the bark over the wounds in trees which has been the means of misleading so many people, because as they see that the bark unites, they take it for granted that the woody fibres does so also, and so, in fact, the growing part of the tree will do; but the stump of the amputated arm becomes a dead substance, and cannot unite with a living one. On the whole it is a dangerous practice to cut large boughs close to the stems of trees, particularly old and unthrifty trees. Young, thriving trees will succeed, if close pruned to a certain extent, but old, stunted, or full grown trees, never. The experienced timber merchant has a quick perception of the marks of this kind of pruning, which often reduces the value of timber one-half, and renders its sale to carpenters for purposes of fine work impossible.

SNAG-PRUNING

is a very pernicious practice. It is performed by cutting the boughs off several inches from the bole or stem of the tree. In old trees these stumps act as conductors for wet into the body of the tree. In young trees, the bark of the stubs throw out young shoots, which flourish for a time, but the heart-wood of these stumps decays, and has a similar effect to the stumps of boughs in old trees, which do not throw out young shoots. This system of pruning is very common to most parts of England: one can see little short dead stumps on almost every tree, particularly on trees growing on roadsides. It is mutilation of this sort that has created a prejudice against any description of pruning whatever, particularly with timber merchants and artisans.

FORE-SHORTENING,

or cutting-in, is an approved method of pruning, and is admirably adapted to training hedge-row trees, to benefit the landlord, without doing much injury to the public. This operation is performed by shortening the over-luxuriant side-branches, but not to cut them to a stump, as in snag-pruning. On the contrary, the top only of the branch should be cut off, and the amputation effected immediately above where a side shoot springs from the branch on which the operation is to be performed. This may be at the distance of 2, 4, or any number of feet from the stem of the tree; and suppose the side branch which is left (when the top of the branch is cut off) is also over-luxuriant, or looks unsightly, it should also be shortened.

The branches of trees pruned in this manner are always kept within due bounds; they do not extend over the adjoining land to the injury of the occupier or public. By adopting this system of pruning, the bad effects of close and snug pruning will be avoided, the country will be ornamented, and the community at large, as well as individuals, benefited.

BOUGHING AND LOFFING

is a system of pruning trees of a considerable size and age previously neglected, and where it is found necessary to remove large branches, leaving a stump in the form of a T-lever-pole.

Of the pruning of trees for picturesque effect on lawns and pleasure-grounds being a matter of taste, where we have not the standard of use to guide us, very little need be said.

THE WEEK'S WORK.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower, Burford, Dorset.

Temperatures.—The prolonged absence of sunshine is very prejudicial to the health of Orchids, but during the past fortnight the weather has been comparatively mild, and there has been no difficulty in maintaining the necessary temperature, and at the same time ventilation in every department, but particularly in the cool house. When the outside temperature is about 40°, the bottom ventilators of the cool house may be left open by day and by night, and with a rise to 45°, fresh air should be admitted through the top ventilators. In the intermediate and warm divisions much caution must be exercised in the regulation of the temperatures should the mild damp weather continue, as with little fire-heat used, a surplus of moisture is likely to occur in the atmosphere. To prevent this, increase the fire-heat a trifle, and give as much fresh air as can be safely afforded, commencing each morning by opening the ventilators a little way, and then gradually increasing the amount as the inside temperature advances, and partially closing them towards evening, so that the fires need not be hard driven.

In the *Cattleya*-house plants of *Chysis aurea*, *C. bracteosa*, *C. levis*, *C. Linnigghi*, and the handsome hybrids *C. Chelsoni* and *C. Sedeni* are now making their new growth. If the plants are strong enough to flower, they should be only sparingly supplied with water, until the spikes are seen to be getting ahead of the growths. The best time to afford more root-space is immediately after the flowers fade. As a small yellow Thrip is apt to get low down in the growths the plants should be closely examined daily. *Chysis* may be induced to send out back-breaks by making an incision half-way through the rhizome between the old pseudo-bulbs, and the operation may best be done at the present time. In this way specimen plants may be obtained; but if it is desirable to increase the stock, the rhizome may be completely severed when the back growth is sufficiently flowering, and the divided piece potted-off singly after sterilizing.

Odontoglossum-house.—At the coolest end of this house a place should be found for the following *Oncidium*s, all of which deserve extended cultivation:—*O. macranthum*, *O. undulatum*, *O. Leopoldi*, *O. serotinum*, *O. Loxense*, *O. monachicum*, *O. superbiens*, *O. lamelligerum*, *O. Klematium*, and *O. zehriani*. These plants luxuriate in a cool moist atmosphere, and it is good practice to syringe well between the pots two or three times a day, or more frequently if there be exceptional aridity in the external air. The aerial roots from the long creeping rhizome of *O. zehriani* should be well moistened at least once each day. Plants of the above species requiring to be repotted should now be attended to, as nearly all of them are showing new roots. Pots of moderate size should be employed, which should be thoroughly well drained. These *Oncidium*s cannot retain their roots for any length of time in compressed material; and the compost should consist of lumpy fibrous peat and sphagnum-moss, with a good number of thick pieces of crock or charcoal. It is not prudent to disturb the roots of any plants that have made much growth, or are producing flower-spikes. If the compost be in a poor state, however, it may be carefully picked out and the roots resurfaced with new material. Examine these Orchids every night, or slugs will cause irreparable damage to the tender roots and flower-spikes. *Odontoglossum* Edwardsi, *O. Lindeni*, and *O. ramosissimum* are very similar in habit and manner of growth to the above-mentioned *Oncidium*s, and require the same kind of treatment. The rare *Odontoglossum retusum* and *O. aspidiorhizon* are now starting to grow, and may be repotted if necessary, and placed at the warmest end of this house. The same remark applies to such pretty Orchids as *Sarcocobitis Fitzgeraldi*, and *S. Hartmanni*. These small-growing species may be suspended from the roof-glass in teakwood baskets or shallow pans; and sphagnum-moss is sufficient as a rooting material. *Orchidium Sophronites*, a very pretty little plant with scarlet flowers, may be grown freely in small pans suspended well up to the light. Like the other *Orchidium*s, it requires but little compost to root in; only a very thin layer of peat with a little moss being necessary. *O. Lawrenceanum* succeeds best if trained upon teak-rafts, with the rods at least 1 inch apart, to allow a free circulation of air amongst the roots. The lower

part of the raft should be inserted into a layer, and firmly fixed with crocks, over which a mat of sphagnum-moss may be placed for the retention of moisture. *Orchidium*s require an abundance of water during growth.

FRUITS UNDER GLASS.

By F. HANES, Gardener, Eastnor Castle, Leicestershire.

The Pinery (continued from last issue).—Should white or brown scale or mealy-bug be observed on any plant, it should be thoroughly freed from these very troublesome and injurious insects before the plant is potted. The following is a good formula to use against either: put $\frac{1}{2}$ lb. of soft-soap and one wine-glassful of paraffin in 2 gallons of water at a temperature of 110°, thoroughly mix both before and during use, and with this mixture syringe the plants all over, but be careful that the mixture does not remain in the axils of the leaves, and as a means of preventing which the plants should be syringed fifteen minutes afterwards with soft warm water, and left on their sides to allow of the water draining away entirely.

Ripe Fruits.—Any ripe fruits not required for immediate consumption may be lifted out of the hot-bed and placed in a dry cool-house, and they will keep in good condition for a longer time than would be possible in the fruiting-house. If this cannot be done, let them be cut with a long stalk and hung crown downwards in the Grape-room.

Strawberries.—Those plants whose forcing began in the month of November will now be rapidly developing fruit, requiring constant attention in the matter of affording water and manurial aids. In very dry positions the plants may be syringed twice a day in sunny weather; but discontinuing the syringing and the manure as soon as the fruit begins to colour, and supplying fresh air in increased volume, even leaving small openings on day and night when the weather is mild, otherwise the fruit will be deficient in flavour.

In whatever structure Strawberries are placed, they should not be far distant from the roof-glass, and ventilation should be abundant in mild or sunny weather. The late-fruiting varieties are best put in the open as far as possible, so as to avoid all incitement to grow for the present. If any sort of protection be afforded these, the ordinary cold frame, with the lights put on during dreaching rains or severe frosts, will suffice.

Successions.—The next batch to be sown now will be in fruit, and requiring to be kept rather drier at the roots and top, but avoiding extreme dryness. When in flower the syringe may not be used on them till a sufficient number of fruits are set and a few over, to allow of some amount of thinning being done. Fruiting plants should have a few birch twigs or neat dead sticks and matting to support the fruit-stalks. No plant should be forced that has not been top-dressed with rich loamy soil made firm around the crown. Later batches may be brought on in cool-houses and pits, not so much heat being now required in getting them to start. Clean each plant from dead leaves, ascertain that worms are not harbouring in the soil, and afford the plants one fumigation with tobacco in some form before the flowers appear.

THE KITCHEN GARDEN.

By W. PORE, Gardener, Highclere Castle, Newbury.

Onions for Exhibition, &c.—From sowings made in boxes in January the seedlings will now be ready for pricking out thinly into other boxes of prepared soil. A compost of three parts turfy loam and one part leaf-soil will suit them well. Press the soil firmly into the boxes, and allow it to become warm before the Onions are removed to it. Give each plant about 2 square inches of space, and keep the atmosphere rather close for a few days, after which ventilate carefully, and increase the quantity as the weather may permit so as to induce dwarf, sturdy growth. Autumn-sown Onions may now be planted out, and as they come into use at a time when the bulbs of the previous season are over, they repay any extra care bestowed upon them. Select a somewhat exposed, rich piece of ground, and plant them 6 inches apart to rows 3 inches asunder. When the plants are established, an occasional dusting of fresh soot will be of great benefit; or if extra large bulbs are desired, a little guano may be sown over them in showery weather. The best varieties are good strains of White Lisbon and Giant Rocca.

Shulds, &c.—If these were not planted in the autumn, the work should be done at once. Let the rows be 1 foot apart, and the sets 9 inches distant from each other. A moderately light rich soil is one that is most suitable for these, and for Garlic, which may also be planted at once. Clives require to be taken up, the clumps to be divided and replanted on fresh ground.

Cauliflowers, &c.—Cabbages or Cauliflowers that are being raised in heat must not be allowed to remain thickly crowded together in seed-boxes, which should they be in too great degree of heat, or they quickly become weak and spindly. Thin the plants early and severely, and keep them well up to the light. When the first true leaf has developed, pick them off into boxes of rich soil, or on beds near to the glass in frames. Keep a close atmosphere for a day or two until fresh growth is made, then ventilate more and more freely until hardened off for planting outside. Plants wintered in frames may be put out if the land be sufficiently dry. Lift them with a good ball of earth and plant with a shovel, thus they will experience but little check. In the event of severe frosts they may be covered with flower-pots. Varieties that make medium growth may be planted 2 feet apart by 18 inches, whilst those of stronger growth, as Veitch's Autumn Giant, will require at least 6 inches more space each way. A little fresh soot dusted along the rows will tend to ward off the attacks of slugs, and prove otherwise beneficial to the plants.

Carrots.—Some early Horn Carrots should now be sown on a south border or other warm situation. These are by no means tender, and they will provide succession to those forwarded under glass. Sow in drills 1 foot apart, and about 1 inch in depth, covering the seed with a little fine sandy loam, and thin out the seedlings as soon as they are large enough to handle.

PLANTS UNDER GLASS

By G. H. MAYCOCKS, GARDENER, LUTON HO, LUTON.

Stove-plants.—The season having arrived when plants begin to exhibit activity in root and shoot, repotting and surfacing have become necessary items of the work. A beginning may be made with the climbers, such as Stephanotis, Allamanda, Clerodendron Balfouriana, Dipladenias, Passiflora, &c. Assuming the necessary pruning was carried out in December and early in last month, and the plants have been resting in the interval, they should now be making an effort to grow. The beds or borders in which Stephanotis grandiflora may be planted should have some of the inert exhausted soil removed, replacing it with new, which may consist of loam one-half, peat one-fourth, rotten manure one-fourth, and a good proportion of sand and charcoal. This should be worked in among the upper roots and made firm. Specimen plants standing in pots which were not potted last year, should be shaken out and repotted in a mixture consisting of three parts half-decayed turfy loam, one of leaf-mould, with charcoal and sand added. After repotting, &c., let the plants be well cleansed, and the shoots trained thinly over the trellis; this done, the shoots, when they grow may be allowed to ramble freely till signs of flowering are noticed, when a plant may be tied into proper shape if it be in a pot, or have its growths suitably disposed on the roof-wires. Allamandas, of various species, and Clerodendron Balfouriana, may be similarly dealt with. Dipladenias require very careful management, besides being kept as free as possible from insect-attack, afforded ample drainage. At the present time Dipladenias may safely, and with benefit to their well-being during the coming season, have the stems and every other part cleansed with an insecticide, using a sponge in the operation. These plants require a good amount of soil in which to root, the size of the pot being determined by the amount of space to be covered. Usually, pots measuring 10 to 12 inches in diameter are sufficiently large. On proceeding to root, shake out much of the soil from the roots, thus reducing the old ball in size, but not cutting off any of the healthy roots. Having placed a good lot of clean crocks in the pot, with rough fibry peat and loam over these, proceed to fill up round the ball with a mixture consisting of peat three-quarters, leaf-mould one-fourth, and plenty of sharp sand, and charcoal not broken too finely. When on examination new roots are seen to be freely permeating the soil, plenty of water should be afforded, and the tops syringed with warm water on fine days. Dipladenias should be examined once a week for insect-attacks, as if these gain a foothold much mis-

chief occurs. Bougainvilleas, which may be planted out in the stove or warm greenhouse, should now be attended to in the matter of surfacing, and started to grow. If the soil is in good condition it will suffice to top-dress only, nutriment when it is required being afforded in the form of liquid-manure. If, however, the shoots, when they break appear in the least degree weakly, a light sprinkling of Clay's fertilizer may be applied at intervals. The temperature of the stove may now be raised to 65° by night, 75° by day, and the water used for all purposes shd not be at a lower temperature than 75°.

Civincis.—A number of these plants about this date should be placed in more warmth; and those that were repotted last year should have the leaves cleansed with a wet sponge, afforded some kind of artificial manure, and be placed in an intermediate-house, and in such a part of it that they can be readily syringed. Established plants which may not have been disturbed at the root for several years, will probably benefit from a repotting into clean, well-crooked pots, using sods, turfy loam, without much of the soil particles retained, and potting pretty firmly. Clives are not particular as to soil, or difficult to manage, and should be found in every collection of plants. Some of our stock of these plants which have wintered in an unheated structure, and not been repotted for seven or eight years, were placed in heat a fortnight ago, and to-day I notice that they have in some cases upwards of twelve to fifteen spikes on plants growing in 12-inch pots; and this too without much attention being paid to their needs during the summer months.

THE FLOWER GARDEN.

By CHARLES HERRIN, GARDENER, DROPMORE, MALDENHEAD.

Annals and Biennials.—Seeds of these plants, if not already in stock, should be obtained at once, as several species will need to be sown shortly, as well as a few perennial species. Easily raised from seeds, many of these plants are excellent for summer bedding; and should the stock of Pelargoniums be deficient, an adequate stock of annuals and biennials may be raised during the spring. Apart from the furnishing of flower-beds, there are corners and spaces in the herbaceous borders that require a few plants in the summer, especially after the foliage of bulbous plants has ripened and died off, and for this purpose annuals are extremely valuable. Verbenas from seed, planted in mixed colours in beds, have a very good effect; and from a good strain the flower-trusses are larger and the growth more free than upon plants obtained from cuttings. Sow the seeds during the next two or three weeks in shallow boxes or pans filled with light sandy soil; cover them lightly, and place in a temperature of 60°. The seedlings will appear in about a fortnight, and as soon as they are large enough to handle, they may be pricked off into other boxes. Antirrhinum may be obtained in both tall and dwarf strains from seed, and the distinct colours of white, crimson, and yellow come fairly true. These should be raised similarly to the Verbenas. Zinnias, double and single-flowered, come true from seed when obtained from a good source. The pompon Zinnias are useful as cut flowers, and being of dwarf growth, may be used in small beds. Sow the seeds in frames on a mild hot-bed about the middle of April. Single seedling Petunias may be used for bedding, or for trailing over the sides of window-boxes and large vases. The useful Galliardia of the grandiflora type is well known, and although a perennial, may be flowered the first year after sowing. G. Lorenziana is a free-flowering annual, producing double flowers of various colours. For sowing in the open borders or in frames for transplanting, many of the following are adapted for embellishing the borders, and for furnishing flowers for indoor decorations:—Bartonia aurea, Coropsis coronata, C. atro-sanguinea, C. tinctoria, C. Drummondii, and C. grandiflora—all annuals, excepting the latter, which flowers abundantly the second year after sowing; Campanula calycotoma in variety, Centaurea Margarita, and Cyanus minor; annual Chrysanthemums double and single; Clarkia elegans, C. rosea fl.-pl., C. integriflora and C. pulchella, Collinsia bicolor, Convolvulus minor, Eschscholtzia crocea, Gaeothera (Godetia) in variety, Linum flavum, and L. grandiflorum L. coccineum, the Amaranthus caudatus (Love-lies-Bleeding), the Malopos rose, white and crimson; Nasturtium, Phacelia Campanularia, a beautiful blue; Poppies, and Sweet Saltua. Other important annuals are Salpiglossis and Sweet Scabious, Sun-flowers, Marigolds, Phlox Drummondii, and Stocks

and Asters. Of the latter, the Comet, in several colours, is a useful kind for cutting purposes.

Mignonette.—To obtain early spikes of flowers from the open, a number of 60-sized pots should be filled with light soil, and about eight seeds sown in each. When the seedlings appear, they should be gradually prepared by a decreased temperature for planting in the open, when this is safe.

Gypsophila paniculata, an extremely elegant, hardy perennial, may be raised easily from seed. If sown now in heat, and the seedlings potted off as soon as large enough into small pots, grown on for a short time in a warm house or pit, and eventually hardened-off before planting out, this will give a little flower the first year, and a great abundance the next one.

THE HARDY FRUIT GARDEN.

By H. W. WARD, RAYLEIGH, ESSEX.

Planting Strawberries.—If the ground has been mounded and treuched as advised in the calendar for January 23, the plants may now be put out in rows 20 inches asunder, and the same distance allowed between the plants in the rows. Keep the centre of each plant well above the soil, and make the latter firm about the roots in planting. Equally satisfactory results may be obtained from plants set out triangularly in clumps consisting of three plants in rows 2 feet apart, and at the same distance in the rows, allowing a space of 4 or 5 inches between the plants in each clump. After planting, lay on a surface-dressing of short manure between the plants, but do not dig it into the ground.

Raspberries, Gooseberries, Currants, &c.—In cases where the planting of these fruits has been delayed from some cause, the work should be completed forthwith. Plant in well-prepared ground, and afford a space of from 4 to 5 feet (according to depth and fertility of soil) between the rows of Raspberry-canec, and from 4 to 6 inches between the canes in the rows. Tread the soil pretty firmly about the roots in planting, and afterwards apply a surface-dressing of short manure 2 inches thick. For directions in regard to planting Gooseberry and Currant bushes, I would refer the reader to p. 58, *Gardeners' Chronicle*, January 23.

Peaches, Apricots, and Greengage Plums.—If the means recommended at p. 91 for protecting the blossoms of these fruits have been adopted, the blinds should be let down over the trees every evening when frost is expected, securing them in position, and raising them the following morning as soon as the sun shines on the wall; or earlier, should there not be any frost.

Vines on Walls.—Vines growing upon open walls require the shoots of last year's growth to be cut back to within one bud of the main shoots. Rub away loose bark off, and should the leaves have been infested by red-spider or mildew last year, paint the wood with a paint-like mixture of clay and a little soot, sulphur, and soft-soap. Apply this to every part of the branches, dabbing the mixture well into and around the old spurs, as being the most likely place for insect pests secreting themselves; and if necessary lime-wash the walls, if this can be done without disadvantageously altering their appearance. In the case of good brick walls having permanent nails driven therein for tying the Vines to, these being washed with a solution of soft-soap water and petroleum will destroy any insects or larvae that may be alighting thereto.

Figs.—The pruning of Fig-trees should be deferred till the end of the month of April or the first week in May, but the matter will be referred to again in this column in due time.

MR. JOHN LAMBERT, gardener to the Earl of Powis, and well-known as a successful horticultural exhibitor, was the recipient recently of a presentation good watch, subscribed for by members of the Welshpool Horticultural Society, in recognition of the services he has rendered to the society as assistant secretary and in other ways since its re-constitution five years ago. The society has reason to congratulate itself that in so short a time it has achieved a position that enables the committee to spend a sum of £600 upon a one-day exhibition. We join in the good wishes expressed on behalf of Mr. Lambert at the presentation meeting.

EDITORIAL NOTICES.

ADVERTISEMENTS should be sent to the PUBLISHER.

Letters for Publication, as well as specimens and plants for naming, should be addressed to the EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be written on ONE SIDE ONLY of the PAPER, sent as early in the week as possible, and duly signed by the writer. *Unpaid, the signature will not be printed, but kept as a guarantee of good faith. The Editor does not undertake to pay for any contributions, or to return unused communications or illustrations, unless by special arrangement.*

Local News.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

APPOINTMENTS FOR THE ENSUING WEEK.

WEDNESDAY, Feb. 24.—Renfrewshire Gardeners meet.
THURSDAY, Feb. 25.—Kew Guild; Annual General Meeting of the Society of Gardeners.
SATURDAY, Feb. 27.—Royal Botanic Society meet.

SALES.

Herbaceous Plants, Roses, Carnations, Begonias, &c., at Frotheroe & Morris' Rooms.
MONDAY, Feb. 22.—Nearly 1600 lots of Border Plants, Bulbs, Roses, &c., at Stevens' Rooms.
TUESDAY, Feb. 23.—Imported and Established Orchids, at Frotheroe & Morris' Rooms.
Japanese Lilies, Azaleas, Roses, Palm Seeds, Geraniums, Herbaceous Plants, &c., at Frotheroe & Morris' Rooms.
Sale of the Leasfield Property, "Winona," Ransden Heath, near Billerica; also the Goodwill and Lease of the Rose Nursery, Swan's Lane, Highgate, at the Mart, Tokenhouse Yard, E.C., by Frotheroe & Morris.
Stove and Greenhouse Plants from Ghent, Roses, Fruit Trees, Shrubs, Border Plants, Bulbs, &c., at Stevens' Rooms.
Importation of Burmese Orchids, by order of Messrs. H. Low & Co.; 300 Cases of Japanese Lilies, as received for the Trade, at Stevens' Rooms.
WEDNESDAY, Feb. 24.—Imported and Established Orchids, at Frotheroe & Morris' Rooms.
FRIDAY, Feb. 26.—

AVERAGE TEMPERATURE for the ensuing week, deduced from Observations of Forty-three years, at Chiswick.—40°.

ACTUAL TEMPERATURES:—

LONDON.—February 17: Max., 51°; Min., 35°.
PROVINCES.—February 17 (6 P.M.): Max., 44°; Sully; Mid., 37°; The Scaw.

The Garden and the House.

Mr. MILNER did good service on Monday evening last when he faced the architects in their own domain. Perhaps he found them less aggressive than he expected. From the report given in another column it is evident that he, at least, took a middle course, avoiding the extremes in which some folks seem to delight, and recognising that good sense and good taste may be found even in the architectural body, in spite of some apparent exceptions to the contrary, manifested in certain books noticed by us at the time of publication. Mr. MILNER'S task was not a difficult one—at least, it was not difficult for him. His subject chiefly was the relation of the garden to the house, and especially of that portion of the garden in immediate proximity to the mansion. There are some, on the one hand, so enamoured of their garden-geometry and their carpet-beds, that they would introduce them into the pleasure-grounds and into the flower-garden; even the Rose-garden may not entirely be exempt from their intrusion. On the other hand, there are some to whom the delicious picturesqueness of the typical cottage garden and its inmates appeals so strongly that they would introduce them bodily on to the terrace walks, where the flowers and growths, so beautiful in their proper place, would be as

incongruous as fish out of water. The beauty of appropriateness is apt to be ignored by both parties; they forget that what is beautiful and appropriate in one situation is not so in another, and similarly that the plants adapted by their contour, their "habit," or their colour, for one spot are terribly out of place in another situation. If these generalities be admitted, then it seems obvious that the landscape gardener and the architect, instead of being antagonistic, should take sweet counsel together, so that the garden in the immediate vicinity of the house shall be in harmony with the architectural lines and masses of the building, whilst the windows shall be so many frames encompassing the pictures made by the skillful landscape gardener, and permitting them, together with the distant prospect, to be seen to most advantage. The architect has, of course, no more to do with the garden proper, away from the house, than the gardener has with the planning of the house itself. Each should have a free hand in his own domain, whilst conjoint action may most beneficially be exerted at the points of contact.

Nay, more, we think the landscape gardener should always have a voice in the selection of the site when a new building is contemplated. It is not uncommon to find houses placed where no landscape artist would have placed them. Again, it has happened in our experience to see a garden planned and carried out, with the site for the mansion duly arranged for, but changed subsequently by the architect, to the stultification of the ideas of the gardener.

Fortunately there is one feature in almost all gardens which, in a sense, acts as a peacemaker, harmonising incongruities, and linking opposites together, and that is, of course—the lawn. The crudities of colour, the barbarities of form are softened by this delightful adjunct; and what setting is there more beautiful for the fine lines and noble proportions of the architect's work than well-kept turf?—as witness many of our cathedral closes, such as Salisbury, Canterbury, or even, of late years, Westminster.

Nothing but good can come from the conference and interchange of opinions between landscape-gardener and architect. We congratulate Mr. MILNER on the success of his effort, and we are grateful for the hospitality extended to the representative of the gardeners by the architects.

EUPHORBIA PULCHERRIMA AT SANTA BARBARA, CALIFORNIA.—Few plants are more popular for winter-decoration than *Euphorbia* (or *Poinsettia*) *pulcherrima*, from Mexico and Central America, where it is called "Pastora" and "Flor de Pasena," in allusion to the fact that it is at its best for Christmas. The accompanying illustration (fig. 35) was taken just a few days before Christmas at the residence of Mr. C. A. EDWARDS, in Santa Barbara, California. To persons familiar only with *Poinsettias* well bloomed in 5 or 6-inch pots, this will make a good show of what we can accomplish in gardening on this coast, where "heads" of *Poinsettias* 2 feet across have been actually measured by myself. This one plant is about eight years old, and is strongly cut back every year in spring. The tropical appearance of the scene was enhanced by hundreds of large showy butterflies, *Danae archippus*, I believe, hovering all day long over the dazzling bracts. *Dr. F. Franceschi*.

KEW GUILD.—The annual general meeting of the Kew Guild will be held in the lecture-room of the Royal Gardens, Kew (entrance by Melon-yard gate), on Thursday evening, Feb. 25, at half-past 7.

THE SURVEYORS' INSTITUTION.—The next ordinary general meeting will be held on Monday, February 22, 1897, when the adjourned discussion on the paper read by Mr. J. WILLIS BOND (Associate), at the last meeting, entitled "Allotments and Small Holdings," will be resumed; and (should time permit) a paper will be read by Mr. C. H. H. HOOVER (Fellow), entitled "Fruit Growing as an Auxiliary to Agriculture." The annual dinner will take place on Wednesday, February 24, in the Victoria Hall, Hotel Cecil, Strand Entrance, East Block.

NEWCASTLE AND DISTRICT HORTICULTURAL MUTUAL IMPROVEMENT SOCIETY.—The monthly meeting of this Society was held on Tuesday, Jan. 9, at 25, Westgate Road, when Mr. JOHN BULLOCK presided. A lecture, illustrated by line-light views, was given by Mr. H. INNES on the "Cryptogams and lower forms of Plant Life." Commencing with the Algae, the lecturer described in a very interesting manner the various forms of reproduction up to the Ferns. The lecture, which was highly instructive, was listened to with marked attention.

THE LEICESTER CHRYSANTHEMUM SOCIETY, was stated at the Annual Meeting held recently, had last year an income of £117 12s. 7d., including a balance from the previous year of £28 19s. 1d. The expenditure amounted to £81 16s. 7d., leaving a balance of £35 16s., and showing a profit on the year's working of £6 16s. 11d.

SOCIÉTÉ NATIONALE D'HORTICULTURE DE FRANCE.—At the recent and very interesting meeting of the Orchid Committee of the National Horticultural Society of France, we noticed, amongst many fine specimens, a splendid *Cattleya Trianae* var., with a fine yellow-coloured throat; *Miltonia Warscewiczii*, with four flower-spikes; *Odontoglossum Wilckeanum* pallens, and several other plants from M. RAOÛT. A cross between *Cypripedium Harrisonianum* and *C. Haynaldianum* is particularly successful; the dorsal sepal is pure deep purple, with a white margin. *M. PAOÛT* staged *C. villosum* × *C. insigne* Chautin, with very spreading flower, and a very fine variety; *C. Lathamianum* × *C. villosum*, the flower of which is the largest we have hitherto seen in this genus. M. OROUX, of the Luxembourg Gardens, showed a new hybrid—*C. villosum* × *C. Spicerianum*—quite distinct from *C. Lathamianum*, the flower being all of a pale greyish-yellow colour; *C. Zampa* (*C. Lecanum superbum* × *C. hirsutissimum*) is worthy of special attention, and gained a Certificate of Merit. M. TRUFFAUT staged splendid varieties of *Civeias* and *Hippeastrums*; and Messrs. LOW of Clapton their interesting crested *Cyclamen*, "Bush Hill Pioneer." M. O. DOIN, the well-known amateur grower, has been appointed President of the Committee. *G. Truffaut*.

NEWSVENDORS' BENEVOLENT AND PROVIDENT INSTITUTION.—We are glad to see that the News-vendors' Benevolent Institution intends to commemorate the present jubilee of the QUEEN'S reign by placing the entire donations received during the year to the Royal Victoria Pension Fund, inaugurated by the QUEEN in 1887, for the benefit of the widows of news-vendors. The festival will be held on Wednesday, April 28, at the Holborn Restaurant, and Lord CREWE has kindly consented to preside.

ONCIDIUM PAPILO ECKHARDTI.—The fine old Butterfly Orchid, *Oncidium papilio*, although introduced from Trinidad more than seventy years ago, is never plentiful, and a really good-flowered *O. p. majus* always commands attention. The finest form of the plant is *O. p. Eckhardtii*, figured in *L.H. Hort.* in 1883, t. 500; and a similar variety was offered for sale by Messrs. PROTHEROE & MORRIS, at their Rooms, on Friday, February 12, the plant realising 75 guineas. The upper segments of the flowers of this plant measured 4½ inches in length, and in colour they were bright orange-red, with a few yellow patches; the broad, declined lateral sepals were also of bright orange-red, barred with yellow; and the labellum was of a clear yellow hue, with a broad, dark orange-red band running round the edge, the margin being yellow.

NATIONAL CHRYSANTHEMUM SOCIETY.—The annual general meeting of the members of the above Society will take place at Auderton's Hotel, Fleet Street, E.C., on Monday evening, February 22 next, at 7 o'clock.

THE NATIONAL VIOLA SOCIETY.—The first annual general meeting of the members was held on the 10th inst. at Winchester House, Old Broad Street, E.C., when there was a large attendance. Mr. W. ROBINSON, the president of the society, occupying the chair. A favourable report of the work carried

summer, a sub-committee having been re-appointed to undertake the work in connection with the latter. It was also decided to publish a report of the proceedings of the conference, together with particulars of the result of the trial of *Violas* made last year in the Botanic Gardens, and copies, price 6d. each, may shortly be obtained from Mr. A. J. ROWBERRY, of the Crescent, South Woodford.

EUONYMUS JAPONICUS.—Mr. OUTRAM obligingly sends us, from the Isle of Wight, fruiting specimens of this shrub. The capsule is dull red, and the seed

established 30,000 plants in various places, and anticipate that, after two years, their produce will attain important dimensions. The plant requires very little care or irrigation, and can be grown in places unsuited for other crops. The fibre exhibited was decorticated in a hand-machine invented by M. FAUBE. Messrs. J. PLANTA & Co., Swiss merchants, of Alexandria, who have established a scientific experimental cotton plantation near Zagazig, on which sixty different cultivations are being made, exhibited some of the results of their enterprise in an artistic kiosk, where every detail connected with the plant could be studied.

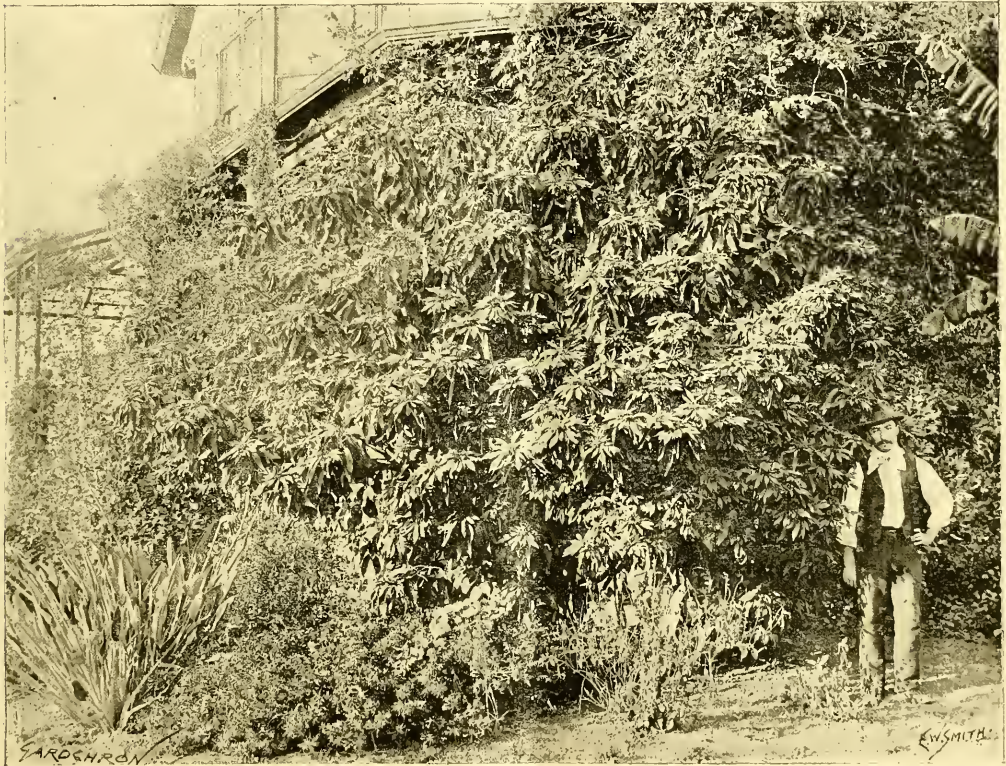


FIG. 35.—*EUPHORBIA (POINSETTIA) PULCHERRIMA*, AS GROWN AT SANTA BARBARA, CALIFORNIA. (SEE P. 121)

out by the society during its first year, together with a balance-sheet, showing that the society had been able to meet all expenses and carry forward a small balance, was adopted. The following officers were re-elected for the ensuing year, Mr. W. ROBINSON, president; Dr. SHACKLETON, chairman of committee; Mr. H. A. NEEDS, hon. treasurer; Mr. A. J. ROWBERRY, hon. secretary; while Messrs. C. JORDAN, of Regent's Park, and J. MOJERMAN, of Victoria Park, were elected to fill two vacancies on the committee. It was decided, subject to arrangement with the council of the Royal Botanic Society, to hold a show and conference in the society's gardens, and also carry out another trial of *Violas* during the coming

is covered by a brilliant scarlet aril, as in the common Spindle-tree. It is only very rarely that we have observed this shrub to produce its seed-vessels even by the sea-side.

HORTICULTURAL EXHIBITION AT CAIRO.—The Second Annual Horticultural Exhibition was opened on the 22nd ult. by the KHEDIVE. This year an agricultural department has been added, comprising exhibits of food, forge, textile and dyeing products from all parts of Egypt. A novelty was specimens of bagging and fine canvases made from the fibre of the Sisal Agave, the cultivation of which has lately been introduced by Mr. E. A. FLOYER, who has

Their first annual report, just published in English and French, is extremely interesting and instructive to cotton growers. The prisons department showed a large collection of ornamental *jardinieres* and window-boxes made by the convicts. For these the low price of 6s. to 7s. procured a prompt sale. The display of vegetables, chiefly by natives and the youths of the Agricultural College, was very fine, and contained some wonderful specimens, grown to a considerable extent from imported English seeds, for which a good demand has sprung up. The Finance Ministry's nursery garden at Ghezirah is an active agent in cultivating and distributing economic plants. Immediately after the exhibition it received applications for 5,000

young trees from native cultivators. The show of hutter, vying with the best descriptions produced in Europe, was remarkable as representing an industry dating from only three or four years back.

HORTICULTURAL CLUB.—The twenty-second annual dinner took place on Tuesday last; the chair being occupied by Sir J. T. D. LLEWELLYN, Bart., M.P., and there was a large attendance of members and their friends. Messrs. Eagleton, Salmond, and H. Wright, of Chiswick, were the special guests of the Club. Amongst those present were the Revs. W. Wilks and J. H. Pemberton, Messrs. Walker, Williams, Bunyard, A. Bunyard, Peter Kay, C. E. Shea, James A. Laing, Harrison Weir, Ed. Cockett, G. Paul, G. Monro, Gurney Randall, W. B. Hensley, G. Nicholson, &c. The toast of "Her Majesty" was proposed by the chairman, and received with acclamation. Sir J. Llewellyn also proposed the toast of "Prosperity to the Club," which was responded to by the Secretary; that of "The Royal Horticultural Society" was proposed by Mr. Geo. Paul, and responded to by Mr. C. E. Shea; the toast of "The Visitors" was proposed by Mr. Cockett, and responded to by Mr. Salmond, and Mr. J. Wright of the *Journal of Horticulture*. Mr. Geo. Bunyard proposed the health of the Chairman, who, he said, had come away from his Parliamentary duties on purpose to be present. Mr. Geo. Bunyard had kindly arranged for the selection of songs given by the brothers Lamb, while Mr. H. Turner and Mr. A. Bunyard contributed to the musical entertainment of the members.

NOTES ON THE NARCISSUS.

CULTIVATION UNDER GLASS.—Among the characteristics which has given to the Narcissus—or Daffodil, if we follow the fashion, and apply the latter name to the entire genus—the premiership among hardy bulbs, is that of its very long season of bloom. It is scarcely scientific to say that what brings it into flower is absence of cold rather than presence of warmth, but every grower will readily understand my meaning. It commonly happens that very early in the year—as, for instance, in the first week of this present February—the first Daffodils are some inches above ground, and in visible bud, so that a certain amount of bloom may be looked for before March. Then, perhaps, a spell of frost supervenes, and holds these buds absolutely in *statu quo*, uninjured, but inert, for six or seven weeks, and the first flowers are scarcely gathered until April. Now, the mere exclusion of frost by the glass of a cold-house, or the veriest minimum of firing, will counteract the whole of this check, while a moderate forcing temperature will give us the earlier Daffodils in January. If, therefore, we begin with such kinds as Golden Spur, Horsfieldi, and Poeticus ornatus, under glass at the new year, and end with the double or Gardenia-flowered Poeticus out of doors in May—sometimes late in May—it is but a small exaggeration to say that we may have a succession of Daffodils for half the year, and in a far more interesting variety than is afforded by the Hyacinth, or even the Tulip.

To grow the Narcissus to perfection under glass, undoubtedly the first condition is to pot the bulbs early. This applies to batches not required until February or March (and indeed to the outdoor plantations), quite as much as to those from which flowers are expected in January. The Narcissus demands ample time for its rooting, a fact too often ignored. I often wonder who are the deluded folk who buy from the clearance lists advertised in January or even February—dates at which the bulbs in my garden have mostly been underground five months or more, and are often showing strong foliage. All the bulbs should be potted by the first week in September, and I consider the latter half of August preferable. It is difficult to obtain them so soon from the trade—though an improvement in this respect is being made yearly, in response to the increasing demand; therefore, it is safest to grow one's own stocks. Bulbs lifted at the end of June, and stored in a cool, dry place, will be in excellent order for potting in August. Daffodils are

not very fastidious as to soil, provided it be sweet and fairly substantial. I use the stiff loam of my neighbourhood, with an admixture of a full third of leaf-mould and a small proportion of bonfire-ash; sand is not requisite. Pure bone-flour, at the rate of a 4-sized potato for every bushel of soil, will be found advantageous, especially if the bulbs are to be flowered twice in the same pots. Seven-inch pots will be found the best size; they will take four or five bulbs of the largest varieties, such as Emperor, Empress, &c., and from six to nine of the smaller kinds. Experience shows that it is well to set the bulbs rather deeper than Hyacinths or Tulips, and that less drainage is required, one piece of crock and a layer of moss being sufficient, as Daffodils like the soil below them to be kept moist. It is very important not to fill the pot to the rim, as copious waterings will be requisite when the plants are in full growth. The bulbs should be set upon tolerably loose soil, and the whole made very firm by pressure from above the bulbs when the pot is full. The soil should be only just moist, and no water must be given at the time of planting. It is my practice to stand the pots on a level bed of coal ashes, and to mound up every pot with a handful or two of the compost before covering them with 5 or 6 inches of ashes. This keeps the soil and the shoots clean, and can readily be touched off with a pointed stick when the pots are taken out. They will be ready for removal early in December, but if the weather is mild and wet, an examination should be made occasionally to see whether the shoots are appearing. It is well to uncover them as soon as the points appear at all, but no material harm is done should they have grown to the length even of 2 or 3 inches. Such blanched shoots are, however, very brittle, and greater care must be taken in moving the pots. They should never be taken at once into forcing-heat, but should pass through at least one intermediate temperature until the foliage is green, and has made some little growth. Where this precaution has been taken, Daffodils will bear a strong heat for a short final stage. Where a large number are grown it will be found convenient to pack them into a cold-frame, and bring them on in successional batches. Kinds, such as Poeticus ornatus, of which the bulbs are now so cheap that they may be thrown away after flowering, will yield fairly good bloom for cutting if packed closely together in boxes, after the fashion of Van Thol Tulips. From the appearance of the flower-buds onwards, Daffodils can scarcely have too much water; and if grown alone, or with such plants as it will not injure, a liberal daily syringing will help the flowers to swell to the largest size. The tests of really good cultivation are large flowers and short foliage. Drawn foliage not only spoils the appearance of the plants, but makes it difficult to keep choice kinds in vigour for another year. On this point it may be noted that it is possible to flower the bulbs really well another year in the same pots, if the following simple directions are carried out. When the last flowers are out or past, put one stick to each pot, and tie the foliage to it securely, and closely enough to prevent damage by wind, and stand the pots quite closely together on ashes or a hard bottom. Keep them abundantly supplied with water until the foliage begins to turn yellow, after which they may be left dry and stacked together on their sides until August. Give them one thorough soaking, let them drain for a few days until only fairly moist, and they may then be covered with ashes as before. The second season the same care should be taken of them after flowering, but the bulbs when dried off should be separated and planted out in nursery-beds to recover.

For hard forcing a choice should be made of those varieties only which are stout of petal and moderately short in the stalk. Probably the common Double Yellow, still unsurpassed for earliness and richness of colour when bunched, Tenby, Golden Spur, Horsfieldi, and ornatus are forced in far larger quantities than any others. In a low temperature the choicer and more expensive kinds, and many of the somewhat flimsier, taller varieties of *N. incomparabilis* are available. The white trumpets, albicans, Anicus,

&c., and the Leeds section, such as Minnie Hume, are of exquisite purity and delicacy thus grown. But the amateur—for whom these notes are written—will doubtless have his own favourites. The May-flowering double Poeticus entirely declines to be forced, but the dealers tell me that their customers commonly buy it for forcing, and after the necessary failure, complain of the bad quality of the bulbs. *G. H. Engleheart.*

FARMERS AND ASSESSMENTS TO LOCAL RATES.

In last week's issue we alluded to the publication of a leaflet by the Board of Agriculture dealing with the subject of assessment of land and buildings as affecting farmers, market gardeners, and others, and we now re-print the leaflet in full.

"The Board of Agriculture have, on more than one occasion, found it useful to circulate a memorandum, prepared by the Local Government Board, directing the attention of occupiers of land in England and Wales to the principles upon which assessments are made to the poor rates and other local rates, and explaining the steps which may be taken, where an assessment is objected to, to obtain a reduction of the amount on the ground that their premises have been valued at too high a figure, or the valuation maintained at a level above the actual value.

It has now been thought desirable to incorporate in that memorandum, in addition to the primary subjects dealt with, a reference to the hearing of the Agricultural Rates Act, 1896, whereby special and important provisions relating to the assessment and rating of agricultural land have been enacted. The leaflet now reprinted has therefore been revised in respect of the third part of the memorandum in question so as to set out the later alterations as regards the liability of occupiers of land not occupied by buildings to local rates in the five years commencing April 1, 1897.

MEMORANDUM.

OUTSIDE OF London the basis for the assessment of the poor rate, and practically of every other local rate levied under the general law, is, where the Union Assessment Acts are in force, the valuation list made under those Acts. There are only ten places in England and Wales, outside London, where the Union Assessment Acts are not in force.*

1. *As to the Poor Rate.*—The poor rate is assessed upon the net annual, or rateable, value of premises, as fixed by the valuation list. The valuation list is made by making certain deductions from the gross estimated rental of the premises, which is the rent at which the property might reasonably be expected to let from year to year, if the tenant paid all usual tenant's rates and taxes, and title-rent-charge, if any. It is not necessarily the same as the rent actually paid for the property.

The deductions to be made from the gross estimated rental in order to arrive at the rateable value, are the probable average annual cost of the repairs and insurance, and any other expenses that may be necessary to maintain the property in a state to command a rent equal to the gross estimated rental.

If a person considers that his assessment to the poor rate is too high, he must, in the first place, give notice to the assessment committee and to the overseers that he objects to the valuation list on which the rate is based. The notice must be in writing, and must specify the grounds of the objection. It may be served on the assessment committee by being left at the office of the clerk to the board of guardians, or sent by post addressed to the committee at such clerk's office, or delivered personally to the clerk of the assessment committee (i.e., the clerk to the guardians) or at his usual place of abode.

On notice of the objection being given, a day will be appointed by the assessment committee for the hearing of the objection, and on such hearing the committee have full power to call for and amend the valuation list. If they do amend it, they must give notice of the amendment to the overseers, who are empowered to alter the poor rate current at the date of the notice of objection; so that, if on the hearing of an objection made by a farmer or other person against his assessment, the assessment committee reduce the assessment, the objector will only be called upon to pay on the reduced amount the rate current at the time when he made his objection. The reduction will take effect also as regards any rate made subsequently.

Supposing that the objector fails to obtain from the committee such relief in the matter as he considers he is entitled to, the only course open to him is to appeal to the next practicable special or quarter sessions against the poor rate.

* These places are the parishes of Alverstoke, Burrow-in-Fisness, Birmingham, East Stonehouse, Liverpool, and Stoke Damarel; the Township of Manchester; and the Poor Law Insuperations of Kingston-on-Hull, Plymouth and Southampton.

He cannot appeal against the rate unless he has first objected to the valuation list in the manner above referred to, and has failed to obtain relief from the assessment committee.

If he appeals against the rate he must give twenty-one days' notice in writing previous to the holding of the sessions to which the appeal is to be made, of his intention to appeal, and the grounds thereof, to the assessment committee and the overseers.

The justices on the hearing of an appeal against the poor rate are empowered to amend the rate by altering the sum therein charged on any person, or in any other manner which may be necessary for giving such relief as they think just; and in certain cases they may quash the rate. If the rate is amended, the valuation list must be altered by the assessment committee in conformity with the amendment.

If the decision of the justices in special sessions is against the appellant, he may carry the appeal to general or quarter sessions. But in the vast majority of instances in which persons who have been over-assessed take action in order to get their assessment reduced, no appeal against the poor rate is necessary; the relief desired is obtained by the simple process of objection to the valuation list before the assessment committee.

With respect to places in which the General Assessment Acts are not in force, it may be stated generally that, subject to the provisions of any local Act, the procedure for obtaining a reduction of assessment is by appeal against the poor rate to special or quarter sessions.

II. As to Rates other than the Poor Rate.—The principal rates other than the poor rate which are levied under the general law, are the borough rate, the county rate, the highway rate, the general district rate, and certain rates levied for sanitary purposes in rural districts.

When the whole parish is liable to contribute to the borough rate or county rate, the sum required is paid out of the poor rate. Where only part of the parish is liable, a separate rate is levied in such part in the same manner as the poor rate, and the same obligation applies to sums required for the expenses of school boards and burial boards. All these rates are based practically on the valuation list; and it would seem that if the assessment committee amend the valuation list after hearing an objection to the list, any of these other rates should be correspondingly amended without any formal appeal against it.

As regards the highway rate, it is expressly provided that where any valuation list has been amended by the assessment committee on objection, the committee shall give notice of such amendment to the surveyor of highways, or other person authorised to make and levy the highway rate, who shall thereupon alter the then current highway rate accordingly.

As regards the general district rate levied by an urban authority, it has been held by the Queen's Bench Division of the High Court of Justice that where, subsequently to the making and demand of a general district rate, the valuation list upon which the rate was based was amended by the assessment committee by the reduction of the assessment of particular premises, there was shown, upon a summons for non-payment of the full amount of the rate as assessed upon the premises, sufficient cause for non-payment to the amount of the rate as was assessed on the amount of rateable value in excess of that to which the assessment committee had reduced the assessment, although there had been no appeal against the general district rate.

The urban authority are empowered to reduce the sum at which any person has been assessed in the rate, if he has been over-rated, i.e., if he has been assessed on a higher rateable value than that entered in the valuation list in respect of his property.

If a person assessed in any of the above rates considers that he is over-rated, and is unable, in any other way, to obtain such relief as he considers himself entitled to, he may appeal against the rate.

In the case of a highway rate, he may appeal to the justices at the next practicable general or quarter sessions. For the purposes of such an appeal, notice in writing must, within fourteen days after the making of the rate, be given to the surveyor of highways, waywarden, or urban authority, as the case may be, of the intention to appeal, and the notice must be accompanied by a statement of the grounds of appeal.

On the hearing of the appeal, the justices may amend or, if necessary, may quash the rate.

An appeal against a general district rate lies to the next court of quarter sessions held not less than twenty-one days after the demand of the rate. Fourteen days' notice of the appeal must be given to the urban authority, and the notice must state the grounds of appeal.

In the case of separate rates levied by overseers to meet expenses of rural district councils, the same appeal lies to special or quarter sessions, as in the case of the poor rate.

Separate borough rates and separate rates to meet contributions required by a county council, may be appealed against in the same manner as a poor rate, and the same remark applies to separate rates to meet the expenses of a school board.

Appeals against rates levied under the Lighting and Watching Act, 1852, may be made to general or quarter sessions, subject to the same provisions as appeals against poor rates.

III. Reduced Assessments in respect of Land not occupied by Buildings.—Occupiers of land used as arable, meadow, or pasture ground only, or as woodlands, allotments, orchards, market gardens, or any other agricultural purposes, are assessable to a general district rate in an urban district in respect of such land, in the proportion of one-fourth part only of the rateable

value according to the valuation list; and in the case of a separate rate for special sanitary expenses in a rural district they are, according to circumstances, either to be assessed in respect of one-fourth part only of the rateable value of the land, or are to pay in respect of it one-fourth part only of the rate in the pound payable in respect of houses and other property.

Occupiers of houses, buildings, and property (other than land) are required to pay, in respect of their assessment to a lighting rate under the Lighting and Watching Act, a sum in the pound three times as that paid by occupiers of land. So that, if the rate on other property is 6d. in the pound, occupiers of land have to pay only 2d. in the pound.

Failure, in rating such occupiers, to allow the partial exemption for which the Acts provide, would be a good ground of appeal against any of the three rates above mentioned.

2. In the case of rates which the occupier of agricultural land has hitherto paid in full, or in the proportion of more than half, he will during the five years commencing on April 1, 1897, be liable to pay one half only of the rate in the pound payable on buildings and other hereditaments. This partial exemption will, however, not apply to rates assessed under any commission of sewers or in respect of any drainage, wall, embankment, or other work for the benefit of the land. The expression "agricultural land" means any land used as arable, meadow, or pasture ground only, cottage gardens ex-

clude almost sure to give some trouble now and onwards, and precautions must therefore be taken in time. There are few forced plants which are more easily ruined by neglect than Roses: they cannot withstand severe fluctuations in temperature, in the quantity of water afforded, or the amount of air admitted to them. As regards means for killing insect enemies of the Rose, all insecticides are of about equal merit, and equal efficiency in competent hands, and all are almost equally dangerous when used indiscriminately. The main points are prompt application, and weak solutions freely used. Too often the amateur is under the impression that a mixture was not of sufficient strength, simply because a few insects can still be seen alive after the plants have been syringed, forgetting that to use the mixture strong enough to immediately kill the insects is a sure way of crippling the tender growths more or less. A weak mixture freely used will accomplish all that is necessary without injuring the plants. I keep a very weak solution in frequent use from the first, even before a single aphid is visible. Fumigation for Roses is not to be recommended, excepting the plants have got thoroughly infested with insects, in which event, and if the growth is much advanced, it is impossible to reach them with washes among so much foliage. In that case a weak fumigation should be kept up for several hours, that is longer than is the general practice. The morning after the fumigation the plants should be freely syringed with a weak mixture of insecticide and water, and a weak fumigation again given the house the next evening. There is no method of killing thrips, red-spider, and aphid long established at a single dressing without checking injuriously the new growths. In almost all cases of crippled shoots and loss of flower-buds, it is caused by too severe measures in combating insects. An equally important matter is root-watering, for if a plant be once allowed to become over-dry, mildew is almost certain to attack it, especially if growth be checked also by inattention to ventilation and heating. As proof of this, it may be noticed that plants in the open are similarly affected injuriously by the changes in the weather. With care, and the regular use of a very weak solution of mildew-killer, mildew seldom does much harm. Flowers-of-sulphur, however well applied alone, is more or less unsightly; but add 1 tablespoonful to 1 gallon of some kind of weak insecticide, and syringe the plants, and it is not unsightly if it be kept well stirred during use. This gives an even yet slight dusting of sulphur over the leaves on both sides, and its presence will scarcely be observed. Most commercial insecticides contain some amount of sulphur, but few have sufficient to be active as against mildew. Liquid-manure in a weak state should be frequently made use of. Little and often is a good rule for all kinds of manure. Never afford manure-water to very dry soil, but afford pure water first. The soil of Rose-borders should now receive an abundant soaking of weak liquid-manure, and any mulches still remaining should be left untouched for the present. Trained Roses on walls and roofs need the same kind of root-protection as the Grape-vine. Their roots are sure to ramble beyond the border in which they were planted, which should be kept from the action of frost, &c. A. P.

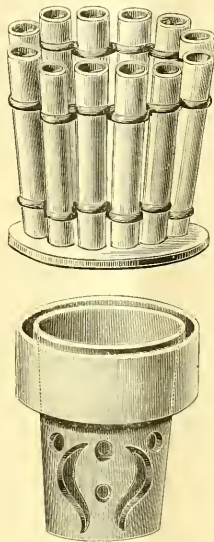


FIG. 36.—NEW FORMS OF ORCHID-POT.

ceeding one quarter of an acre, market gardens, nursery grounds, orchards, or allotments, but does not include land occupied together with a house as a park, gardens other than as aforesaid, pleasure grounds, or any land kept or preserved mainly or exclusively for purposes of sport or recreation, or land used as a racecourse.

After March 31, 1897, the rateable value of agricultural land is to be stated separately from that of buildings or other hereditaments in the valuation list. 4, Whitehall Place, S. W., January, 1897.

Copies of the leaflets are to be obtained free of charge and post free on application to the Secretary, Board of Agriculture, 4, Whitehall Place, London, S. W. Letters of Application so addressed need not be stamped."

THE ROSARY.

THE ROSE-HOUSE.

WHERE ROSES are forced, the present is a critical time, and the gardener must be constantly on his guard against the sudden and wide fluctuations of temperature so frequent during the early spring months. During bright days artificial heat is scarcely needed, but at night and in the early hours of the morning, as well as on sunless days, artificial heat is as much a necessity as it was two months ago. Insects and

NEW INVENTION.

A NEW FORM OF ORCHID-POT.

Our attention has been drawn to a new form of Orchid-pot, devised with a view to secure uniform moisture, complete drainage, and free access of air to the roots. The principle seems to be that of making the basket, pot, or raft of hollowed material, to be filled with water, or sphagnum-moss saturated with water. When this is done, it is assumed that the moisture will at once begin to permeate the porous clay, and thus secure constant moisture and an equable temperature to the roots. How far this will prove an advantage over the "usual process of saturation followed by gradual evaporation" remains to be seen. The pots, rafts, &c. are made in various shapes, some of which are shown in fig. 36. Mr. A. G. Stollery, of Bushey, is the patentee.

HOME CORRESPONDENCE.

THE ROYAL HORTICULTURAL SOCIETY AND APPLE CLASSIFICATION.—On reading the annual report of the Royal Horticultural Society as published recently in your columns, I was somewhat disappointed not to see mentioned therein the above-named subject. Judging by a letter from Mr. Wilks, the secretary, published in one of your contemporaries a short time since, I felt sure the Council intended to give us their decision on the matter. Surely it is not too late for this to be done before another hardy fruit exhibition comes on. To my mind, the best way to do this would be to appoint a small representative sub-committee, consisting of some of the members of the Fruit Committee. Doubtless their decisions would be acceptable to the main portion of cultivators and exhibitors of hardy fruits, and to those persons who have to arrange prize-schedules bearing upon the subject. Without wishing to prejudice the matter in any way, I am of opinion that, for exhibition purposes, two lists (and two only) should be allowed, viz., one for kitchen Apples, and one dessert diet. For private use, the matter must remain as before, viz., each choosing for himself, whether eating or cooking, or what are now called kitchen or dessert varieties. *H. J. C.*

LECTURES AT THE DRILL HALL.—I hope that a special effort will be made by the lecturers to read their own papers, and not leave it to the Assistant-Secretary of the Society to read them. I certainly think they are not so interesting when they are read second-hand; and I should like to see some members of the Council, or some of the different committees there, to support the chairman, instead of having empty chairs to do duty for them. Some of the lectures during the past year were very tame affairs, and there appeared to be very little interest taken in them by the Council or members of the different committees, which is not very creditable to the leading horticultural society in the country. *John Corvill, F.R.H.S.*

AT CHISWICK.—Most heartily do I endorse the suggestion that there should be a Fellows' meeting at Chiswick during the ensuing summer. At some period when the gardens look their best would be the fittest for such a gathering. If the visit included an inspection of the various trials being carried on, it would suffice if the meeting began at 2 p.m., and continued well into the evening; so many Fellows could then get through their business, and have a very enjoyable finish to the day. Why should not the council, in commemoration of the great event of the year, hold an "at home" to the Fellows, and to the committees especially? What a delightful function might it prove to be, if carried out with liberality and discretion! Very probably some Saturday would be of all days the best for the purpose. If, as you suggest, the proposed Victorian Medal be then distributed, all very well, provided the ceremony of distribution were short and devoid of formality. Of course, even the desirability of that ceremony would depend on the general acceptance or otherwise of the basis on which the Medals were awarded. I trust they may not be converted into apples of discord. Better a hundred times the proposal be dropped than that their distribution should create jealousies and heart-burnings. The proposed Chiswick gathering could not do that if all Fellows be invited. It would be a pleasant garden-party, affording ample time to see the gardens, to hear the medals to join in friendly intercourse, and send all home in the happy assurance that it was good to have been there. *Correspondent.*

CYPRIPEDIUM INSIGNE SANDERÆ.—In your issue of February 6, I am sorry to see that Mr. Ball, commenting on his *Cypridium insigne Sanderæ*, seems to have got rather "mixed." I have also an impression that his reference to a later importation of this plant is a totally incorrect one. I may here remark that I think it would be wrong to name this *Cypridium* the "Baron Schroder" var., inasmuch as it is clearly shown that Mr. Sander's had part of the same plant; it therefore surely remains *C. i. Sanderæ*. My knowledge of Mr. Hurly's plants extends but very little beyond what he shows publicly. I should not have taken any notice of his remarks had he not said that he never showed his *C. i. Sanderæ*. Allow me to refresh his memory, and ask if the plant with three flowers shown in Messrs. Heath's Orchid group at the Manchester Chrysanthemum show, November, 1895, was not his plant? and if it was not labelled *C. i. Sanderæ*, and the name

given as such in the *Gardeners' Chronicle* of November 30, p. 657? also if this was not the same plant he gave £275 for at the Pickering Lodge sale? It was at this show I had the opportunity of comparing very carefully the yellow form shown by Mr. Ball with the one shown by Mr. Hardy—hence my comments. *S. S., February 15.*

RIBSTON HA L, NEAR WETHERBY, YORKSHIRE.—As will be known to many of the readers of the *Gardeners' Chronicle*, it was on this estate that the famous Ribston Pippin Apple originated. It is the property and residence of Major Dent; and Mr. Thomas Jones has been the head gardener there for forty years, he having been recommended to the post by Sir Joseph Paxton in 1857, under whom he has served at Chatsworth. During the time he has been at Ribston he has served under three generations of the "Dent" family, and retained their confidence all along. Mr. Jones is retiring from his post, and he has purchased a neat cottage in that small but pretty inland watering-place, Boston Spa, situated a few miles distant from Ribston on the southern side of the river Wharfe. Mr. Jones will carry into his well-earned retirement the good wishes of all who have known him. While his name has not been very prominent in the gardening world, his work has been done good work, being a sound practical gardener, and in all the varied relations of life a good man. He is succeeded by a Mr. McClelland, late gardener to Colonel Sylvester, near Wigam in Lancashire. *H. J. C.*

VAGARIES OF THE ROSE.—"Wild Rose," whose communication I read in the last issue of the *Gardeners' Chronicle*, will be interested to learn that a bush of *Niphotes* in a private garden in this neighbourhood has recently departed from its normal condition, and assumed the climbing character in a very decided manner. Last season the shoots were thick, numerous, and long, although the plant was originally very weak. The bush has now become one of extraordinary vigour, so that the growths are unequal to contain it, and the shoots have had to be cut back. In my opinion, this fresh instance of variation from the type is more conspicuous than that displayed by the specimen exhibited by Messrs. Keynes, Williams & Co., at a meeting of the Royal Horticultural Society some years since. I shall be curious to note how the bush behaves this season. There is nothing in its surroundings to account for the sudden change of character in this *Rose*. *W. Roupell, Streamham Hill, S.W. [A reversion to the savage habits of its ancestors. Ed.]*

THE GRAPES AT EDINBURGH.—I have been a competitor for thirty years at Edinburgh, and I never heard so much dissatisfaction expressed as at the show last autumn; neither do I wonder at it, when judges gave the best prizes to Grapes neither finished nor yet fit to eat—which is an undeniable fact. In the Black flavour class, *Gros Maroc* was placed 1st, and Black Hamburgh 2nd, before several bunches of *Muscad Hamburgh*, &c. A northern gardener seems to think that these bunches were not 1 lb. weight. The smallest I noticed was the Black Hamburgh, which was placed 2nd. Be that as it may, there were plenty over 2 lb., and some over 3 lb., so far as I can remember. The schedule says distinctly, all fruit must be ripe and sound, and fit for the table. Why do judges judge fruit without tasting it? Mr. Dixon's letter is the point, and had he been judge at Edinburgh, the prize tickets would, I have no doubt, be differently placed in a good many classes. It seems to me the time has arrived for rules in judging to be applied, also in specifying the varieties wanted. "The proof of the pudding is the eating o't." *A Falkirk Gardener.*

LIGUSTRUM CORIAECUM.—With reference to a note inserted in your issue for February 13, on *Ligustrum coriæcum*, which is of Japanese origin, I would remark that many years ago I visited the Metropolitan Convalescent Hospital at Waltham-on-Avon, and there for the first time in my life saw this beautiful Privet in full bloom. I was so much struck with its bloom that I requested some cuttings might be sent to the Atkinson Morley Convalescent Hospital at Wimbledon, which was done. These cuttings in a year or two grew very well; they were subsequently transplanted, and removed to a long row at the back of the hospital, where every year, in June or July, they have large quantities of white blossoms of some size, utterly unlike our ordinary Privet. They are always the admiration of beholders. I sent other cuttings to a friend of mine, the Vicar of Salsby, in Leicestershire, but the results there I believe are less satisfactory than at the two former

places, which may, perhaps, arise from the soil not suiting them. They are quite hardy when the roots are established, and I think might be tried in London. This Privet does not seem to me to be a plant of a particularly slow growth. *John Colchester.* [Is our correspondent sure that the plant he mentions is correctly named? Ed.]

PEAS IN TRENCHES.—This is a question which requires discussion by gardeners. In an announcement from Mr. Markham to the *Gardeners' Chronicle*, found on p. 83, there are the following statements:—"For several years I have been a great advocate of trenches in Pea-culture, especially mid-season sowings;" and further on—"Still I have my doubts whether, in a very dry season the crops are as good as would be the case if less manure was used, and the soil made firmer." I would ask, is this generally the case? With me it is quite the reverse; and I maintain that sowing in trenches is a greater gain in a dry season than in a wet one, and more especially if the soil be light and porous. I would not advocate sowing Peas in trenches in heavy retentive soils. *J. Mayne, February 8.*

THE SPICE APPLE.—Having made the acquaintance of the true Spice Apple some years since through the veteran Rose-grower, Mr. Benjamin Cant, of Colchester, it has been a great favourite of mine ever since. Now, I specially noticed Mr. Fyett's note on flavour in Apples, in *Gardeners' Chronicle* for January 9, p. 27, and have no doubt, from reading Mr. Barrow's and his note, that they are writing of the D'Arcy Spice, so called from the hall of that name, near Colchester. In fact, the D'Arcy Spice is one of the most popular and useful of all our late dessert Apples. Being such a good and almost indispensable dessert Apple for April and May, and the fact, too, that several other Apples have a good dash of spiciness in their flavour, it followed almost as a matter of course that several Spice Apples in the commerce, which has caused no little confusion. Yet would hesitate to call them imposters; on the contrary, the some half-dozen I have met with have all had more or less of spiciness in their flavour, with a dash of Russet, Nonpareil, and Ribston. The Spice of old Chiswick seems different from the Spice of Dr. Hogg's Manual; while both these and the D'Arcy Spice differ from the Spice or Sack of the same authority. The Aromatic Inset is also often confounded with the Spice Apple, and is a dessert Apple of superb quality from December to February. The Hereford Spice, on the contrary, is much higher coloured, and earlier, being in season from October and through January. But as the district round Colchester is undoubtedly the home of the D'Arcy Spice, it is no doubt this very valuable and useful dessert Apple that your correspondent wrote about. As to the hardness and dryness of the flesh that Mr. Barrow notes, this depends a good deal on soils and seasons, and when these qualities are not in excess, they are merits rather than defects. We have plenty of soft, juicy Apples for eating, but assuredly it is not too many firm fleshed ones, as perfect Ribstons or Russets, that will keep sweet and sound until May and June. The D'Arcy Spice is also in commerce as the Essex Spice, the Baleno [?] Pippin, and the Spring Ribston, having been sent out by the late Thomas Rivers of Sawbridgeworth under that name about 1858, so far as I can remember, though the resemblance is not striking—unless in flavour. But the name of Spring Ribston from such a source, was a very high testimonial as to sterling quality. *D. T. F.*

PRIMULA OBSCURA.—Your correspondent, "R. D.," on p. 65, recommends *P. obscura* to be crossed with *P. Sieboldi*. In 1893, I crossed *P. Sieboldi* cortusoides with *P. obscura*, in the hope of raising a variety that would not cause such irritation to the skin of human beings after handling as *P. obscura* does. I selected a well-coloured *P. S. cortusoides* for the seed-pure, and I isolated the plants also, carefully removing the anthers from several of the blooms before the pollen formed. To the proper time I applied pollen from *P. obscura* to the stigma of each of these blooms. Seed-pods were duly formed, and they produced good seed, which was sown the following spring. It germinated freely, and I anticipated their flowering with much interest; but to my great disappointment they proved to be nothing more nor less than *P. S. cortusoides*. Possibly "R. D." and others may think the anthers were not removed before pollen-dust was formed, and so the blooms were fertilised with their own pollen; but I assure them this was not the case. I was very careful to remove the anthers sufficiently early. *J. H. W.*

SUTTON'S PRIMULA STELLATA.—Although this year is my first trial of it, I must say that I am highly satisfied with its flowering qualities. I have it growing in 4½-inch pots. The blossoms being gracefully poised on slender foot-stalks in whorls, with stems varying in height from 4 to 12 inches, give the whole plant the appearance of a pyramid, measuring, in some cases, fully 30 inches in circumference. The flowers are white, and sometimes flecked with crimson, and the plant has foliage of a dark green colour; and as a pot-plant for general decoration for the greenhouse and conservatory, this light and graceful Primula should become very popular. A red-coloured variety of this type would be a great acquisition. *Alce. Melvins, Zalkland Palace, Wigt.*

WHAT BECOMES OF THE RAINFALL?—It may be of interest to note, in reference to the question, "What becomes of the rainfall?" that in consequence of the exceptionally large rainfall during the four last months of the year 1896, amounting to 18 inches of rain, which is equal to the enormous quantity of 1818 tons of water on each acre of land, the springs of water have risen in the wells of the neighbourhood of Harpenden, Hertfordshire, very remarkably. In our unused well from which records of the rise and fall of the water is taken at the end of each two months, it was found that the depth of water rose from 3 feet 8 inches in September to 5 feet 3 inches in November, and to the extraordinary jump of 8 feet 8 inches at the end of January, 1897. The rainfall of January, 1897, according to the 8-inch gauge of Sir John Lawes at Rothamsted, is 1.75 inch, which is about three-quarters of an inch less than the average fall for January in the neighbourhood, extending over a period of forty years. *J. J. Willis, Harpenden.*

CHRYSANTHEMUM SPORTS.—Some time ago I was astonished to see a beautiful green-yellow flower on a plant of the variety Vivand Morel, which had been grown as a bush, and had given a good crop of normally-coloured flowers. Upon examination, I found a shoot had sprung from the neck of the plant a little above the soil. I cut the plant down, and carefully staked up the shoot, and in doing so I found another shoot a little distance from the first, which I shall call No. 2. When both were staked, the plant was stood near the glass. The first one has grown a fair flower under the circumstances, measuring 7 inches across; the green-yellow has given place to outside petals white, shading to pale yellow centre. No. 2 was a very light shade of Charles Davis in bud, but has finished a light cream, with a tinge of chocolate towards the centre, resembling some of the Tea Roses. I think there can be little doubt but that they will be fixed, as I shall have no difficulty in getting stock from them. I think it is remarkable that two shoots should produce flowers so entirely different from the colour of the parent. *Wm. Kilgour, Elgie Hill Gardens, Aberdeen.*

THE VICTORIA ERA FUND.—Having read with much interest the various proposals to commemorate Her Majesty's long and beneficent reign, which have from time to time appeared in your columns, I venture to make an additional one. I suggest that gardeners and their assistants be asked to contribute a small fixed sum towards a general fund, which should be equally divided between the Royal Benevolent, the Gardeners' Orphan, and the Victorian Era Fund; and if all the gardeners, foremen, and journey-men in the United Kingdom would contribute on the following scale—*5s.* for head-gardeners, *2s. 6d.* for foremen, and *1s.* for journey-men, &c., what a grand sum it would amount to! The sacrifice is so small, that it might be made by everyone. It might be easily managed if head-gardeners would unite and collect in their own gardens and immediate neighbourhood. I think that, as a rule, gardeners are as loyal and charitable body of men as any, and I think it is a duty to make a special effort this year to do something that will tend to remove the reproach that a collector so often hears made, "Why don't the gardeners themselves do more to assist these charities, especially as they, and their families, only reap the benefits." Did they do so, I think our employers would be more ready to help these most deserving charities. *F. Harris, Eastnor.*

THUYA PLICATA AND T. OCCIDENTALIS.—I quite fail to understand how anyone who has studied living specimens of these trees growing in this country can say that *T. plicata* is a variety of *T. occidentalis*. Since reading your article I went purposely and examined a tree of *T. plicata*, 18 feet high,

and compared both foliage and cones with those of *T. occidentalis*, of about the same size, growing a short distance away. The very unpleasant smell emitted by the foliage of *T. occidentalis*, the loose, open habit, long, lithe, and scantily-foliated branches, and small sub-erect cones, 180,000 seeds of which go to the pound weight, are marked characteristics. Then, the foliage always turns of a dirty bronzy hue in winter. *T. plicata*, on the other hand, has not the least unpleasant smell, is always compact of growth, though not formally so, with short, stout, rather ascending branches, that are well furnished with flattened lycopod-like foliage, while the plentifully-produced cones stand quite erect, with small and light seeds, 245,000 going to the pound weight. In winter this tree never turns bronzy, but rather a dark yellowish-green colour. If *T. plicata* must be a variety I would refer it to *T. gigantea*, with which in every respect it is far more nearly related than with *T. occidentalis*. *J. D. Webster.* [Are there two plicatas in cultivation? The story is not yet ended. Ed.]

CLIMBING ETIENNE LEVET ROSE.—I have read with pleasure an article by "Wild Rose" on "The Vagaries of the Rose;" but I am surprised to see that he does not know of the strong-growing or climbing form of Etienne Levet, which has been known to our nurserymen ten or twelve years. It is not as yet common in gardens, and it did not originate in this neighbourhood. When treated and pruned as a cut-back, you would scarcely tell the difference between it and the type, except that the growths are slightly stronger; and there is, as "Wild Rose" remarks, no difference to be seen in the flowers; but immediately the first flowers have bloomed, it throws up strong sucker-like growths from the base, that reach a height of 4 to 6 feet, which very seldom flower in the autumn. Neither has "Wild Rose" mentioned Climbing Victor Verdier and Climbing Henri Ledebaux, which I consider are two of the prettiest climbing hybrid perpetuals we possess. In both these varieties the flowers are smaller than their types, and produced in great profusion. I would not trouble you with this if I knew who "Wild Rose" is; but I was interested in his article, and imagined I could add to his knowledge of the subject on which he wrote. *Henry Merryweather, Jun., Southwell, Notts.* [We are very thankful for such notes; and so is "Wild Rose." Ed.]

THE CLIMBING VARIETIES OF FRENCH BEAN.—At this season, when gardeners are sending their orders for seeds, &c., to the nursery and seed-men, I think it right to call attention to the merits of the Climbing French Beans. My experience of these Beans last summer was that no kind of kidney Bean withstood drought and heat so well; and the varieties which I grew were Epicure and Tender-True. Our Scarlet Runner Beans set few flowers, and were, besides, eaten-up with red-spider; whereas the new Beans had healthy leaves and bines, and supplied nice crisp pods. *R. M., Newbury.*

CEDRUS DEODARA FAR NORTH.—All the Cedrus Deodara I have seen in this district seem to do well in fully-exposed situations. It is a species not much planted as a forest tree. This place stands on a hill, with full exposure to the North, and to the winds which come down the Caledonian valley. There were several Deodars planted eight years ago on the lawn, which have withstood exposure quite as well as any Scotch Fir could be. *D. R. Macdonald, The Gardens, Drummond Hill, Inverness.*

GLADIOLUS HYBRIDS.—Having been engaged for some years in raising Gladioli from seeds, obtained by crossing such species and varieties, that I have been enabled to induce to flower at the same time, I read with interest the remarks made by Mr. Douglas (*Gard. Chron.*, Jan. 9, p. 17), in which he urges upon amateurs the importance of taking up the work of hybridising. In this I agree with him perfectly; but having had experience, I am also aware that the matter is not so easy as might be supposed. In the first place, showy species, likely to give good results when crossed with those we now have, are not easy to obtain, and many of those obtained do not prove so easy to cultivate, or to flower, as do those at present in gardens. Five years ago I got Gladiolus Ludlowi, which appeared to be very distinct and robust, judging by the strong, ribbed foliage which it produced the first year. It, however, failed to flower, and the second year it would not even grow. In 1895, I bought *G. oppositiflorus*, described as being a white variety, and a very strong grower, even up to 6 feet in height. However, I lost it; but thinking it was just what I wanted, I got it again in 1896. This time, thinking it had previously been killed by

cold, I potted it, and at the same time a batch also of *G. Chlidias*, all being planted in rich soil in June, and well watered and cared for. The latter bloomed well, but *G. oppositiflorus* never did, and did not make so strong a new corn as the old. I have it now in a very warm place in sand, treating it as I do *Watsonia O'Brienii*, to try and ripen the corns. I shall start both in a gentle bottom-heat to have them ready to go out in May. With regard to the Madagascar record of *G. oppositiflorus*, I think there has never been any confirmation, and even of the Kaffrarian habitat, it is said to be doubtful whether it is indigenous. Of course, the difficulties suggested will not deter me from continuing the work in the best manner that our variable climate will allow; but I would suggest that gardeners or nurserymen in the Cape, Natal, Melbourne, Sydney, and other parts where sunlight and heat are more abundant than with us, should take up the crossing of such hardy species as *G. Saundersii*, *G. purpureo-annatus*, &c., with any showy but more delicate species obtainable, and thus some new races might be obtained, which when sent to us in the mature corn would prove as easy to grow and flower as are the varieties of *G. gandavensis*, though they would be difficult for us to raise in the first place. I have had very satisfactory results with the Nanceianus and Lemoinei hybrids, raising and flowering them very quickly. On March 25, 1896, I sowed seeds from these two varieties, and managed to spare the seeded plenty of water, whilst the old balls got none. The result was that we got our best spikes from the seedlings. The first of the batch bloomed early in September, and in spite of the cold and wet, they continued to bloom until the first week in November. *J. O'B.*

FLORISTS' FLOWERS.

PANSIES AND VIOLAS.

With Viola and Pansy societies around us doing their best to popularise these lovely, and withal sweet garden favourites, one is tempted to ask, "Where is your old correspondent, Mr. Bennett, who had the honour of introducing the progenitor of the Violas when he brought out *Viola cornuta* as a bedding plant?" I do not, of course, forget that part of the honour belongs to the late John Willis. By intermixing with the Pansy, a hardier plant has been produced, which not only rivals the Pansy, but is superior to it as a bedding plant. Few people flower the Pansy in pots now, but I do not know any sweeter or more beautiful flower to grow in pots and keep in cold frames during the winter and spring; moreover, they are cheap, and very easy to cultivate. I recommend cuttings to be taken in July for raising plants to grow and bloom in pots. The best cuttings are those which are made from the slender growths growing in the centre of a plant, which usually have some few roots attached to them—set these in boxes in a shady place, and they will readily start into growth; whereas, if the thick flowering stems be taken and cut at a joint, it requires a longer time to form roots if they do so at all, and they never make sufficiently good plants for pot culture. When the young plants get well established, pot them into 60-size flower pots, and arrange them in a cold-frame on the north side of a wall, or high fence of some kind, the Pansy disliking hot sunshine, so that it should not be fully exposed to the lights, should only be made use of during heavy rain and hail-storms. The plants should be repotted into 6-inch flower-pots as soon as they fill the first pots with roots, using a good rich and open compost of three parts loam, one of decayed-manure, and one of leaf-mould with some sand to keep it open. As the plants increase in growth in the autumn, the flower-buds must be pinched out, and the shoots pegged down on to the soil.

CARNACTIONS AND PICOTEES.

The careful amateur will now be making preparations for the re-potting of his Carnations and Picotees. The compost may consist of one-half partially-decayed turfy loam, decayed stable manure and leaf-mould one fourth each, and coarse white sand enough to give porosity. Some growers for exhibition use artificial manure, and for this purpose I find bone-dust as good a stimulant as any; but I find that it is better to mix it with the compost used as a surface-dressing in

May. The flower-pots, mostly 24's and 16's, should be washed ready for use. The plants should have all dead and decaying leaves removed, and if the weather be dry and mild, the frame lights may be removed. Many growers submit their plants to extreme dryness during the winter; but this is a mistaken practice, as at the beginning of February moisture has become necessary, growth usually recommencing then if the weather be mild. At this season frosty winds are prevalent, and little or scarcely any ventilation is then advisable. If the collection is a small one, the repotting of the plants may be delayed till the middle of March. Notes should be made of the loss of varieties, so that they may be made good. Some varieties are very scarce, and it will sometimes occur that the stock of plants is sold out by an early date, and it behoves the grower not to delay his orders. No plants should be purchased unless well established in pots, Carnation layers not being successfully transplanted in the spring months. Nothing much can be done for the present with seedlings, excepting in fine weather to stir the soil slightly with a Dutch hoe. When the young leaves develop in the spring, sparrows do much damage—at least, I have never yet had a collection of seedlings that did not require some kind of protection from these birds, such as black thread stretched tightly above the plants.

POLYANTHUSES AND PRIMROSES

of the self and fancy types now become popular. I do not advise growing any of these in pots, as when grown thus they are seldom satisfactory. The plants are quite hardy, and thrive in deep moderately-moist loam, including to clay. Seed saved from the blue-flowered varieties cannot be expected to produce every flower quite like the parents, and some have a tendency to revert to pink; and even if the blue varieties are propagated by division, true to name, and grown in pots, the blue tints will, in some instances, change to pink. Therefore, for every purpose let them all have a good position, slightly shaded if possible, and in moist soil, where they cannot suffer from drought in summer. *J. Douglas.*

NURSERY NOTES.

"DICKSONS OF CHESTER."

ONE sunny morning early in August last the writer in company with two horticultural friends and fellow-judges engaged in making the awards at the great Chester show the previous day, visited Messrs. Dicksons famous nurseries and enjoyed a long-deferred pleasure, at the least as regards myself, the city of Chester having been so long celebrated almost as much for the excellence of the trees, &c., cultivated so extensively and well a short distance outside the municipal boundary as it has been for the picturesque-ness of its old streets and houses.

The main drives, from the nursery entrance near the Chester railway-station until that at Upton, about two miles further away, is reached, are flanked on either side by handsome specimen Conifers of different species and varieties and dimensions. The avenue which leads to the offices, &c., from near the railway-station is imposing, and the well-filled borders on either side afford capital facilities for visitors to inspect the sort of bedding-plants, which included at the time of our visit fine types of double and single-flowered tuberous-rooted Begonias.

Some idea may be formed of the extent of these nurseries when I state that between 400 and 500 acres of land are occupied by forest and other trees, herbaceous perennials, and other plants. The work in each department is carried on, as is usual in such large concerns, under the supervision of specialists; and a visit is especially interesting to a gardener if made during the summer and early autumn months, when the trees and plants are in full growth, and their characteristics readily observed. Trees and shrubs are frequently transplanted, and set out at wide distances apart, so as to develop fully, and form well-furnished examples, and which

can be safely transplanted at the proper time in any part of the country.

Roses are largely grown here, about 45,000 Briars being the number that are budded annually; whilst about 250,000 dwarfs are worked upon the Manetti stock.

About 100 acres of land are occupied by fruit trees, and stocks upon which to work them, the trees being transplanted annually. The land is fully exposed to the winds which blow from the Welsh hills, and necessarily make short-jointed, well-consolidated growth, furnished with abundance of small feeding roots and fruit-buds. Such trees, when properly planted in gardens and orchards having a soil of average depth and fertility, go ahead, and within a space of a few years yield profitable returns. The land is laid out in plots of various sizes, well filled with numerous kinds and varieties of trees, shrubs, including Conifers in great variety, &c., ranging from the seedling and cutting stage upwards, all well and skilfully grown.

Dotted about in proximity to the various drives running through the nursery are handsome specimens of diverse trees and shrubs of an ornamental character, and beautiful either in contour, in foliage, or flower.

Facing the offices is located an extensive and excellent collection of herbaceous perennial plants, which in August were in fine condition. It was the right season to inspect such plants, but should be preceded by others in April and June by anyone who intends to form herbaceous beds and borders.

On the other side of the avenue, and close to several ranges of glasshouses, were noted some well-filled flower-beds, that afforded visitors to the nursery much useful information as regards the question, "what kind of plants should be employed in filling flower-beds with a view to securing a satisfactory combination of distinct and pleasing shades of colour during the summer and autumn months?"

The glasshouses are well arranged and extensive, and contain many species and varieties of plants, clean and well-grown. I observed among others, Palms, Tree and other Ferns, Orchids, Eucharisas, brightly-coloured Codieums and Dracaenas, Bouvardias, Camellias, and Azalea indica. Mention should be made of the Pot-Vines, some 2000 in number, clean, vigorous, short-jointed, with filbert-like buds in the axils of the leaves, excellent for fruiting in pots or planting in borders. In the frame-ground a long, narrow tank is constructed about 1 foot above the ground-line, divided in several places, in which species and varieties of Nymphaeas are cultivated, a convenient arrangement that enables buyers to make their own selections. In the extensive collection of Carnations were noticed a fine lot of plants of the popular Mrs. Reynolds Hole, introduced by the Messrs. Dicksons in 1857. *H. W. W.*

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

FEBRUARY 9.—*Presents:* Dr. M. T. Masters in the chair; Rev. W. Wilks, Mr. Shea, Mr. McLachlan, and Rev. G. Henslow, Hon. Sec.

Coniferous Woods.—Dr. Masters exhibited specimens of Deodar, Larch, and Cedar of Lebanon, grown by Mr. J. Simpson at Wharfedale. They were said to have been planted at the same time, about thirty years ago. It was remarkable that the heart-wood of the Larch and Deodar were much alike, while that of the Cedar was different, in not being so darkly coloured like the others. The quality was in each case good, especially that of the Larch. It has been observed by Dr. Tristram that the wood of the Cedars grown on Mount Lebanon is much closer in grain and darker in colour than that of trees grown in England (*The Nat. Hist. of the Bible*, p. 343).

Species of Thunberg.—Dr. Masters also exhibited specimens from Mr. A. D. Webster and others, illustrative of the confusion in the nomenclature of this genus. He observed that *T. occidentalis* grows in the Atlantic States of North America, and *T. gigantea* (Lobbi) on the north-western or Pacific side. A form originally named *T. plicata* was introduced at the end of the last century by Monzies from Vancouver, in Don's *Catalogue of the Plants of the Botanic Gardens at Cambridge* this plant is recorded, but without description. As this is a western species, it is really synonymous with, or at most, a variety of what is now

generally called *T. gigantea*. But the original *T. plicata* having probably died out, the name has now become transferred to a form or variety of *T. occidentalis* from the Atlantic side of the United States. It is probable that both species are represented by a "plicata" variety, but it is not certain whether the Pacific variety is now in cultivation. Specimens of the original plants from Vancouver are in the Herbarium of the British Museum, so that it is a question whether, strictly speaking, the name *T. gigantea* should not be superseded by that of *T. plicata*. The plant now bearing that name should then be called *T. occidentalis* var. *plicata*.

Stout Fibre.—A sample of this fibre, extracted from Agave sisalana, was received from Mr. W. Floyer, of Basingstoke. It was grown at the experimental farm at Mussia, near Luxor, by Mr. E. A. Floyer, of Cairo. He hopes to grow enough to supply all the bags for Egyptian Sugar, Cotton, &c. The fibre is very white, and extremely strong. The Government of Malta is anxious to produce the cultivation of this Agave into that island; but as the unmodified parts consist of hard, exposed rock, it is doubtful if it would pay, even if the climate prove suitable. The name was given to the fibre imported from Yucatan. (*Acad. Bull. of Misc. Inform.*, March, 1887.)

HORTICULTURAL MEETING AT GHEENT.

FEBRUARY 7.—At the meeting of the Chambre Syndicale des Horticulteurs Belges held on the above date, M. JOLIS HVE showed a good selection of his finest hybrid Cypripediums; also Dendrobium Leochisium, noble nobilium, and litaiiforme, all three well bloomed; Odontoglossum Copartianum, a fine variety; Cymbidium eburneum giganteum, Lelia anceps alba Hycana, an excellent variety; Miltonopsis Blucana, with two splendid racemes of bloom; Cypripedium insigne Sandersa Baron Schroder var.; Lelio-Cattleya Falls (C. Downiana × L. crispata, very beautiful, especially the lip, the colouring of which recalls that of C. Downiana, although the purplish tones of crispata are retained); Lycaste Podmanii, with very pretty flowers, and other beautiful plants, helped to make M. HVE's exhibit a remarkably good one.

M. ED. PINEAERT showed a very vigorous Cypripedium Luthianum inversum (villosum × Spicerianum), with many splendid blooms; M. JOLIS DE COCK had C. Chamberlainianum, with two fine flower-spikes; L'HORTICULTURE INTERNATIONALE, Brussels, showed Cattleya Trianae Imperator, which has been figured in *L'Indice*.

In addition to the Orchids, other fine plants were exhibited; M. CAPITAINE sent Chispa Mlle. Alfine Capitaine, a new variety, with a truss of bloom nearly 12 inches across; well arranged, the flowers a bright and brilliant colour; M. RIQUOTS showed Nidularium striatum, similarly grown; M. L. DE SWYD-DUYVIER, Oron-Hanburgueses, with leaves very long, spreading, of deep colour and well grown; M. POLLEMAN-MAESHOOT, Vriesea punctulata; Messrs. HIGON LOW & Co., Cyclopedia Bush-Hill Pioneer, with flowers glaucous white, and its many crests of the same pure white. M. ED. PINEAERT exhibited a hybrid between Floris tremula and P. serrulata, called P. Boultonii; a good Floris, with flowers of different formations. He also remarked upon the climatic conditions in the different parts of the country, and how different plants required different conditions of climate. Taking up his subject proper, "Soils and their Comparative Fertility," the lecturer explained that the fertility of soils might be divided into natural or inherent fertility and artificial fertility. The following were indications of natural fertility. The character of the general vegetation of a district, such as the trees and hedges; for instance, where the Ash is to be found doing well the soil would generally be of a stony nature, and the sub-soil damp; whilst on chalk and oolite formations the Beech would predominate. Trees also (especially isolated trees) generally indicated whether storms are prevalent in the district, as they showed by their stunted growth or otherwise whether they had been subject to rough winds in the past. A good Thorn hedge showed that the soil was exceedingly fertile, and the method in which farmers cultivated their land the nature of the soil could easily be known, for when the land is laid out in high ridges, it generally indicates

READING AND DISTRICT GARDENERS' MUTUAL IMPROVEMENT.

FEBRUARY 8.—The fortnightly meeting of the above Association was held on Monday. The lecture for the evening was "Soils and their Comparative Fertility," by Mr. DOUGLAS A. GILCHRIST, B.Sc., Edinburgh, Director of the Agricultural Department, University Extension College, Reading. Mr. Gilchrist said that before he commenced his lecture proper, he would like to direct attention to the geological map of the British Isles, showing the variations in soils, and the character of the soils derived from different formations. He also remarked upon the climatic conditions in the different parts of the country, and how different plants required different conditions of climate. Taking up his subject proper, "Soils and their Comparative Fertility," the lecturer explained that the fertility of soils might be divided into natural or inherent fertility and artificial fertility. The following were indications of natural fertility. The character of the general vegetation of a district, such as the trees and hedges; for instance, where the Ash is to be found doing well the soil would generally be of a stony nature, and the sub-soil damp; whilst on chalk and oolite formations the Beech would predominate. Trees also (especially isolated trees) generally indicated whether storms are prevalent in the district, as they showed by their stunted growth or otherwise whether they had been subject to rough winds in the past. A good Thorn hedge showed that the soil was exceedingly fertile, and the method in which farmers cultivated their land the nature of the soil could easily be known, for when the land is laid out in high ridges, it generally indicates

a cold wet soil. The heritage of common land generally indicated whether the soil is fertile or not. Then the colour of the soil and the character of the soil and subsoil, which may be seen at the edge of a ditch, give a good indication of natural fertility or otherwise. Sills in order to be fertile, must have all the ingredients of a plant-food present in a suitable form; they must also be in a suitable condition as far as till is concerned. Digging or ploughing, or especially trenching, when carried out on a rather heavy soil or subsoil, when wet, frequently does considerable harm for years by causing the soil to "bake." This should be avoided by carrying out these operations on the heavier class of soils only when they are sufficiently dry. There must also be no injurious ingredients present in the soil.

Dealing with the plant-food in the soil, and the condition in which it should be present, the lecturer dealt with the problem of how the plant-food of the soil could be effectually retained in the soil or even increased, and then discussed how these ingredients could be suitably increased in the soil by the application of various manures. Reference was made to the composition of various local soils which had been analysed in the chemical laboratory of the college. One sample, which was taken from Messrs. Sutton & Sons' trial grounds, showing a useful soil which had been greatly improved by manuring and trenching; the other from poor down land close to the coast, which, with a drainage, in a poor condition that it would take years to convert it into a fairly good soil. Before closing, the lecturer made reference to the work of the earthworm. Darwin was the first to recognize the great work done by the earthworm in improving the soil. Although many would consider that the castings caused a great disfigurement to their lawns, yet he could assure them that the worms were greatly improving the soil. Many questions were asked, and a discussion ensued.

SOUTH SHIELDS CHRYSANTHEMUM.

FEBRUARY 12.—The annual meeting of the South Shields and Northern Counties Chrysanthemum Society was held in the Guardians' Offices, South Shields, on Friday evening, February 12. Alderman T. G. MARANE, President, occupied the chair.

Mr. Bernard Cowan, F.R.H.S. (Hon. Secretary) read the annual report, which stated that the balance in hand had been increased from 15s. 5d. to 25s. 8d., which might be considered as highly satisfactory.

NATIONAL CHRYSANTHEMUM.

FEBRUARY 15.—A meeting of the general committee took place on the above date, Mr. B. WYRNE in the chair. After the reading of some correspondence,

Mr. C. Harman Payne proposed to rescind a recent resolution of the committee, fixing the hour for commencing the meetings of the Floral Committee at 3 P.M. on all big show days, instead of 2 P.M., as heretofore, but it was lost on a division. The Secretary submitted a draft report, dealing with the leading incidents of the past year, and acting forth that the Special Jubilee Fund had reached the sum of £370 11s. The financial statement showed that the receipts from all sources amounted to £1,775 17s. 2d., adding to a balance in hand of just over £25 at the commencement of 1896, and a sum of £25, which had been added to the Reserve Fund. The total expenditure included an extra gift to the Secretary in respect of additional work occasioned by the Jubilee celebration. There is a sum of £100 on deposit at the bank, and a small balance to the credit of the Reserve Fund. The sum of £370 11s. had been expended on prizes and medals awarded at the various exhibitions. The report and financial statement were received and adopted for presentation at the annual general meeting on the 22nd inst. Eight new members were elected, including two Fellows and the Tonbridge Gardeners' Society, as also the Warrington and District Chrysanthemum Society were admitted to affiliation. General regret was expressed that Mr. B. Wyne had declined to be nominated for reelection as Chairman of the Committee, a post he has held for the past two years.

ENQUIRY.

"Is that questioner much shall learn much."—BACON.

Rev. G. HENSLOW, of Drayton House, Ealing, writes: "Will any expert in Hyacinth growing kindly explain why the stalks often fail to grow, so that the flowers appear and expand close to the bulb?"

POINSETTIA PULCHERRIMA.—Hasany reader observed the production of seed-vessels by this plant. X.

Obituary.

JOSEPH CHAMBERLAIN.—Died on the 24th ult. For thirty-one years Foreman at Hyde Park; after an illness of a few days.

M. JORDAN.—We learn from the *Revue Horticole* of the death, at an advanced age, of M. JORDAN, the eminent botanist. He was not only a closet botanist, but cultivated the plants in which he was interested

and to each minor variation of a constant character he applied a specific name, so that he was a "splitter" *par excellence*. M. VIVIAN MORIÉ, now of Lyon was his head gardener.

THE WEATHER.

[The term "accumulated temperature" indicates the aggregate amount, as well as the duration, of degrees of temperature above or below 42° Fahr. for the period named, and this combined result is expressed in Day-degrees—a "Day-degree" signifying 1° continued for twenty-four hours, or any other number of degrees for an inversely proportional number of hours.]

Diameter. Above (1) to the Mean for the week ending February 13.	TEMPERATURE.					RAINFALL. Inches. No. of Rainy Days since January 5, 1897.	BRIGHT SUN. Percentage of possible Durations for the Week. From Jan. 5, 1897, to Feb. 13, 1897.
	ACCUMULATED.						
	Day-deg. Below 42° for the Week.	Day-deg. Above 42° for the Week.	Day-deg. Above 42° difference from Mean since January 5, 1897.	Day-deg. Below 42° difference from Mean since January 5, 1897.	More (+) or less (-) than Mean for the Week ending Jan. 5, 1897.		
6	2	0	42	35	+ 47	25	2 8
1	1	1	43	44	+ 94	5	21
2	1	4	35	35	+ 42	3	30
3	1	5	32	36	+ 20	3	32
4	2	12	20	42	+ 30	3	27
5	2	18	11	31	+ 18	1	27
6	1	4	20	50	+ 72	4	30
7	1	8	21	38	+ 32	2	27
8	4	24	1	28	+ 15	4	30
9	1	13	21	55	+ 50	1	26
10	3	20	1	37	+ 21	1	26
11	4	4	0	5	+ 16	1	36

The districts indicated by number in the first column are the following:—
0, Scotland; 1, Principal Wheat-producing Districts—1, Scotland, E.; 2, England, N.E.; 3, England, E.; 4, Midland Counties; 5, England, including London, S.; 6, Principal Grain, &c., Districts—6, Scotland, W.; 7, England, N.W.; 8, England, S.W.; 9, Ireland, N.; 10, Ireland, S.; *Channel Islands.

THE PAST WEEK.

The following summary record of the weather throughout the British Islands for the week ending February 13, is furnished from the Meteorological Office:—
"The weather continued dull and unsettled over the Kingdom as a whole, but the amounts of rain were comparatively slight, and less frequent than of late, except at the south-western stations."
"The temperature was rather above the mean in most districts, but a little below it over Scotland and in England, N.E." The highest of the maxima were registered on the 9th, when the thermometer rose to 56° in the 'Midland Counties,' and to between 50° and 54° in the other districts. The lowest of the minima, which were recorded on the 8th over England, the 13th in Scotland, and on irregular dates in Ireland, ranged from 16° in 'Scotland, N.,' and 19° in 'Scotland, E.' to 34° in 'England, S.W. and Ireland, S.,' and to 37° in the 'Channel Islands.'
"The rainfall was less than the mean in all districts, excepting 'England, S.W. and the Channel Islands,' where there was a considerable excess. Over the north-eastern parts of Great Britain the fall was very slight."
"The bright sunshine again shows a deficiency in most districts, but was in excess in the north and east of Scotland. The percentage of the possible duration ranged from 25 in 'Scotland, E.,' and 20 in 'England, N.E.,' to 5 in 'England, S. and N.W.,' to 3 in 'Ireland, S.'"

MARKETS.

COVENT GARDEN, FEBRUARY 18.

FRUIT.—AVERAGE WHOLESALE PRICES.		s. d. s. d.	
Apples, French: Crabs, per bush.	4	0	4
— Wellingtons, per sieve.	6	0	—
Grapes, French: let quality, per lb.	2	0	2
— Alicante, 2nd quality, per lb.	1	6	1
— Cape, Black, lb.	0	8	10
— Gros Colmar, selected, per lb.	2	6	8
— Gros Colmar, 2nd quality, per lb.	2	0	—
Nuts, Cob, per 100 lb.	55	0	0
Nectarines, Cape, per case containing 2 to 4 doz.	8	0	12
Peaches, Cape, per case containing 20 Pears, Cape, per case containing 20	8	0	12
— Pear, Beurré (California) 1 doz. cases, 8 to 10 doz. per case.	6	4	7
— Pear, small cases, 4 to 1 doz. per case.	7	0	8
Pineapples, Barbadoes, each, each.	8	0	5
Strawberries, p. oz.	1	6	1

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

s. d. s. d.		s. d. s. d.	
Arums, doz. bun.	1	6	3
— Anemones, p. 12 blooms	2	0	4
— Bonvardias, per doz.	0	6	0
— Carnations, pr. bn.	2	0	3
— Chrysanthemums, doz. bun.	6	0	12
— Eucharis, per dozen	3	0	4
— Hyacinths (Roman), doz. sprays	0	6	1
— Lilac, wh. (French), per bunch	3	0	4
— Lilium Harris, per doz. bouquets	4	0	8
— Lily of the Valley, dozen sprays	0	6	1
— Maidenhair Fern, per 12 bunches	4	0	8
— Marguerites, per 12 bunches	2	0	4
— Mimouette, per bunches	4	0	6
— Mimosa (French), per bunch	1	0	1
— Narcissus, var. doz. bunches	1	6	3
— Snowdrops, doz. bunches	1	0	2
— Tuberoses, 12 blms.	1	0	2
— Tulips, per doz.	0	6	1
— Violets (Fr.) Farme, per bunch	2	6	3
— "Czar, bun.	2	0	8
— "doz. bun.	1	0	2
— (Fr.) per doz. bun.	1	6	2

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

s. d. s. d.		s. d. s. d.	
Adiantum, per doz.	4	6	12
— Aspidistra, per doz.	12	0	12
— specimen, each	5	0	15
— Azaleas, per doz.	18	0	30
— Chrysanthemums, per doz.	6	0	12
— Cinerarias, per doz.	9	0	12
— Cyclamen, per doz.	18	0	12
— Daffodils, per doz.	6	0	
— Dracaenas, each	1	0	7
— various, per doz.	10	0	24
— Evergreen shrubs, in variety, doz.	6	0	24
— Ericas, per doz.	10	0	12
— Ferns, small, doz.	1	0	2
— "various, doz.	5	0	12
— Fuchsia, per doz.	1	0	
— Foliage plants, per doz.	12	0	
— Geraniums, per doz.	8	0	
— Hyacinths, per doz.	6	0	
— Marguerites, doz.	8	0	
— Palms, various, doz.	3	0	
— specimens, doz.	10	0	
— Poinsettias, per doz.	5	0	
— Tulips, doz. pots	6	0	

VEGETABLES.—AVERAGE WHOLESALE PRICES.

s. d. s. d.		s. d. s. d.	
Artichokes, Globo, per doz.	2	6	—
— Chinese (Stachys tuberosa), per lb.	0	8	—
— Asparagus, per bunch.	10	0	15
— Giant, per bunch.	10	0	15
— English, per bunch.	6	0	7
Beans, French, Channel Islands, per lb.	1	9	2
— Madeira Kidney, per lb.	1	9	2
— "of 5 to 10 lb.	8	6	4
— Caulflowers, Chabour, per doz.	1	3	1
— Caulflowers, Corn wall, per case.	9	0	10
— Cucumbers, home-grown, select.	8	0	9
— "doz, per dozen.	8	0	6
— Horseradish, Eng. 1 lb. pr. bundle	2	6	—
— Horse radish, For. 1 lb. pr. bunch	1	6	—
— Mint, per bunch	0	8	10
— Mushrooms (Indoor) per lb.	0	6	—
— Onions, English, per cwt.	5	6	0
— Foreign, per cwt.	3	0	6
— Potatoes, French, per bush.	0	5	0
— Islands, per lb.	0	5	0
— Kidney Potatoes, French, per lb.	0	2	0
— Radishes, Channel Islands, per dozen	1	0	1
— Rhubarb (Forced), per doz.	0	10	1
— Salad, small, per doz punnets.	1	6	—
— Sals, per punnet.	3	4	—
— Spinach, per doz.	0	9	10
— Tomatoes, Canary Islands, per case, about 12 lb.	4	0	5

POFOTOS.

There are large stocks on hand; very few samples stand color, and prices have again fallen for second class. Dunbar Maincrop, 55s. to 95s.; Dunbar Saxons, 70s. to 75s.; Lincoln Maincrop, 50s. to 75s.; do. Saxons and Abundance, 40s. to 70s.; do. Giants, 50s. to 55s.; Blacklands, 35s. to 40s. John Bath, Wellington Street, Covent Garden.

SEEDS.

LONDON: February 17.—Messrs. John Shaw & Sons, Seed Merchants, of Great Maze Pond, Borough, London, S.E., write that there were but few buyers on to-day's seed market, and the business passing, owing, doubtless, to the still waterlogged state of the land, was limited in extent; indeed, the present season promises to be a late one. Prices for Clovers and Bye-grass seeds are without material alteration. For Tares there is a good inquiry at full rates. A cablegram just received from New Zealand reports the Cocksfoot crop much damaged by heavy rain. A speculative movement which has sprung up is advancing quotations for Canary seed. There is no change in Hemp seed. Peas and Haricots sell more freely at the moderate rates current. Scarlet Runner Beans are now obtainable on very low terms.

CORN.

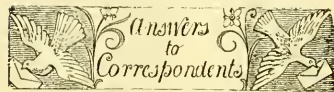
AVERAGE PRICES of British Corn (per imperial qt.) for the week ending February 13, and for the corresponding period of 1896, together with the difference in the quotations. These figures are based on the Official Weekly Return:—

Description.	1896.			1897.			Difference.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	
Wheat	20	7	8	21	8	8	+ 8
Barley	21	11	2	21	8	8	+ 2
Oats	11	0	16	0	16	0	+ 2

FRUIT AND VEGETABLES.

GLASGOW: February 17.—Averages of the prices current at market during the past week:—Fruit: Peas, 8d. per lb.; Apples, 1s. to 2s. per stone; Tomatoes, Guernsey, 6d. per lb.; Scotch, 10d. per doz.; Grapes, home, 2s. to 3s. do.; do., foreign, 6d. do. Vegetables:—Turpins, white, 6d. doz. bunches; do. Sweden, 1s. to 1s. 4d. per wtt.; Savoy, 10s. to 1s. 3d. per dozen; Cabbages, 6d. to 8d. per dozen; late do., 10d. to 1s. do.; red do., 2s. 6d. to 3s. do.; Cauliflowers, English, 2s. to 2s. 6d. per dozen; Parsnips, 4s. to 4s. 6d. per wtt.; assorted Herbs, 1d. to 2d. per bunch; Leeks, 1s. 6d. to 4s. per dozen bunches; Mint, green, 6d. per bunch; Onions, Dutch, 3s. to 3s. 9d. per bag; do., Portugal, 1s. per stone; do., Globe, 7s. 6d. to 8s. per wtt.; Parsley, 3s. to 4s. per stone; Greens, 3d. to 4d. per bunch; Celery, table, 1s. to 3s. per bundle; do., common, 4s. to 4s. 6d. per wtt.; Potatoes, best, 6d. per stone; Carrots, 3s. to 4s. 6d. per wtt.; Broccoli, 2s. to 3s. per dozen; Artichokes, 10s. to 12s. per cwt.; Cucumbers, 12s. to 15s. per dozen; Lettuces, round, 6d. to 9d. do.; do., French, 1s. to 1s. 3d. do.; Radishes, 6d. per dozen bunches; Horseradish, 2s. to 2s. 6d. per bundle; Mushrooms, 1s. to 1s. 3d. per lb.; Rhubarb, 1s. 9d. to 2s. per stone; Broccoli, 6d. to 7d. per dozen; Cress, 8d. per basket; Brussels Sprouts, 2s. to 2s. 6d. per stone; Endive, 1s. 6d. to 2s. per dozen; Spinach, 3s. to 4s. per stone.

LIVERPOOL: February 17.—Average of prices at following markets:—St. John's, Potatoes, 10s. to 10d. per peck; Cucumbers, 1s. each; Grapes, English, 2s. to 3s. per lb.; foreign do., 6d. to 8d. do.; Pine, English, 4s. to 5s. each; Mushrooms, 1s. 8d. per lb. Birkenhead—Potatoes, 6d. to 8d. per pk.; Cucumbers, 8d. to 1s. each; Grapes, English, 3s. per lb.; foreign do., 6d. to 8d. do.; Pines, foreign, 2s. to 5s. each; Mushrooms, 1s. to 1s. 6d. per lb. North Hay—Potatoes, Importers, 1s. 8d. to 1s. 10d.; Giants, 1s. 8d. to 1s. 10d.; Main Crop, 2s. to 2s. 6d.; Oblongs, 1s. 8d. to 1s. 10d.; Brocco, 1s. 10d. to 2s. 3d. per cwt.; Turpins, 10d. to 1s. per 12 bunches; Sweden, 1s. 3d. to 1s. 6d. per cwt.; Carrots, 3s. to 3s. 6d. do.; Onions, 4s. to 4s. 6d. do.; do., foreign, 7s. to 3s. 6d. do.; Parsley, 12 bunches, 10d.; Cauliflowers, 1s. 6d. to 2s. per dozen; Cabbages, 8d. to 1s. 6d. do.; Celery, 6d. to 1s. 4d. do.



APHIS ON BROAD-BEANS: D. B. S. The species is *Aphis papaveris*—the winged insect shining black, the wingless dull black. These insects suck the juices of the young tender stems, flower stalks, and lower sides of the leaves, causing red-brown patches on the latter. The insects void a sweet liquid, the so-called honeydew. This is the common species; a less common one is *Siphonophora visica*, which is grass or olive-green, [the winged insects] black, with body of green and black in the hindpart. A mixture of soft-soap, soot, water, and tobacco-juice, applied with a syringe, will clear them off. If they infest merely the tops of the stems, cut off the latter and burn them.

BACTERIA AS PLANT FOOD: Cesar. If the experiments with nitrogen are meant, we believe that the substance has proved of no use in field culture of crops.

BOOKS: C. A. Birrou, Vines and Vine Culture (171, Fleet Street); Ward, My Gardener (Eyre & Spottiswoode, East Harding Street, E.C.).

DENDROBIS: X. Y. Z. We know nothing of *Dendrobium fimbriatum aureum*. The typical *D. fimbriatum* has wholly yellow flowers; and *D. fimbriatum oculatum* has similar flowers, but with a dark chocolate blotch at the base of the lip. Probably if you rested your plants in the latter part of the summer in an airy vivarium or greenhouse they would give more spikes of flowers.

EARLY VINERY STARTED DECEMBER 1: E. H. Not detrimental to the Vines if the process of forcing is very gradual, as in all cases it should be. Should the Vines have been forced early in previous years, they will start to grow a little quicker than would be the case with Vines not so treated. Of course, early forcing is not without its ill-effects on Vines in course of time.

EGGING FOR A BED OF LOBELIA CARDINALIS: A. P. As a harmonious coloring, you might use a broad band of Ajuga reptans, tuberosa Begonias with crimson flowers, or some strong-growing tricolor Pelargoniums with a red zone in the leaf; or, if the bed be a large one, and made on the lawn with a wide expanse of turf around, Brazilian Beet would have a good effect. If you decide on an edging that will contrast with the reddish foliage of the Lobelia, you might employ *Centaurea ragusina*,

Cineraria maritima, *Chamaeopsea dioica*, silvery variegated Pelargoniums, as Bijou, Flower of the Day, &c. A green-leaved Cannula of low growth, such as C. Eblemanni, or a drooping broad-leaved plant, as *Panicum salsitum*, would look well if the bed is one of large size. Lobelia beds should always be made convex in form, as by that means a greater number of the plants are seen at a glance, and the space left for the edging plants ample, otherwise there will be the appearance of the latter crowding the plants that provide the chief display.

EDINBURGH ROYAL BOTANIC GARDENS: Rural. If you state your wishes to Professor J. E. Balfour, the director of the establishment, you will doubtless be furnished with the desired information.

FUMIGATING A VINERY WHILST FRUIT AND LEAVES ARE STILL ON THE VINE: Rural. To do so would be imprudent, as the fumes might injure the Grapes, and certainly would impart an unpleasant flavour to them. It is quite safe to use XL All Vapour, the odour being not perceptible after the lapse of a few days.

GROWERS IN THE CHANNEL ISLANDS: C. S. N. The *Fruit Growers' Year Book* for the present year, price 1s., will give the information sought. It is published at the Cable office, 30, Fleet Street, E.C.

GRUBS GNAWING VINE ROOTS: J. Herd. The grubs seen are those probably of the Vine-weevil, *Otiorhynchus sulcatus*, which you must get rid of, or they will work great injury to your Vines, both as grubs gnawing the roots, and perfect beetles eating the buds, &c. For a method by which to catch the latter, see the *Gardeners' Chronicle* for February 13, in answer to correspondent, "W. McH." The weevil grubs are much more difficult to encompass however, and as they live mostly near the surface, and under clods and stones, the soil, &c., should be turned over with a hand-fork, going carefully all over the area, picking up the grubs and destroying them.

INSECTS: W. A. G. A large parasitic Ichneumon Fly that has been the means of destroying some larger and probably injurious caterpillars.

MANURES FOR FRUIT TREES, &c.: H. R. Mineral phosphates of lime, or bones treated with sulphuric acid, i.e., superphosphate of lime, and such as contain much potash. These manures suit stone fruits. Apples, Pears, and bush fruits may be afforded artificial manure, rich in nitrogen applied at the rate of 6 to 10 lb. per tree a year, in two or more dressings. The same would suit the Strawberry, but adding a larger amount of potash, using the manure as a top-dressing in showery weather in spring and early summer.

MEDICINAL PLANTS, &c.: J. C. L. *Vanilla aromatica* would not succeed in your greenhouse, the plant being a native of tropical South America, and requiring the temperature of a hot-house. Indeed, there are but very few medicinal plants which could be successfully grown in a greenhouse; but if you could heat the house, say in winter from 58°–70°, and in summer from 63° to 85°, there are many species which could be cultivated, of which we may indicate *Cephaelis Ipecacuanha*, *Cinchona lanceolata*, *C. nobilis*, *Maranta arundinacea*, *Piper Betel*, *P. Cubeba*, *Quassia amara*, *Smilax Sarsaparilla*, *Myroxylon balsamiferum*, *Amonium cardamomum*, *Cinnamomum verum*, &c. Besides these there are such plants as yucca used extensively in the arts, or as food, as *Indiarubber*, *Sugar-cane*, *Cotton*, *Gutta-percha*, *Ginger*, &c., or *Yucca*, *Coffee*, *Cocoa*, *Kola*, *Cabbage-Palm*, and many others. A visit to the Economic-house at Kew will give you many more examples.

METHODS OF PROPAGATION: A. P. We are pleased to know that the articles have been found of use, but we are unable to say if the writer of them intends to publish them at some future time in book form. We hope that he does, and should raise no objection.

NAME OF FRUIT: Scott. Northern Greening.

NAMES OF PLANTS: Correspondents not answered in this issue are requested to so good as to mark the following number—A Constant Reader. A very brightly coloured variety of *Lelia acceps*, and *Cattleya Triandri rosea*.—C. L. 1, *Odontoglossum Andersonianum*; 2, an immature or imperfect flower of *Odontoglossum crispum*.—*Fir Croft*. Newly-imported plants of *Dendrobium Wardeum* frequently produce flowers of large size, similar to those sent, and afterwards the blooms come of the

usual size. Will you let us see a flower from the same plant next year!—R. N. H. A very pretty variety of *Cattleya Percivaliana*. The labellum is larger than usual, and the broad lilac margin is an effective feature.—J. F. The brilliantly-coloured Lichen is *Cladonia coccifera*, common in heathy places.—A. S. K. 1, specimen insufficient; 2, *Haworthia margaritacea*; 3, *Senecio Koenigii aureo-maculata* (*Farfugium grande*); 4, *Euphorbia splendens*; 5, specimen insufficient; 6, *Eucalyptus globulus*; 7, *Fuchsia procumbens*; 8, probably *Campanula fragilis*: sent when in flower; 9, *Myrsiphyllum medeoloides*.

SEEDING CINERARIAS: Constant Reader. If you are desirous of obtaining certain colours, forms, &c., the plants to be operated upon must be placed in a house a good distance away from the rest of the plants, covering them securely with hexagon netting so as to exclude the bees. Then you must proceed to cut off every bloom that was expanded at the time of removal, so as to have no chance crosses, but only those you desire, which may be attained by cross-fertilising by hand, or allowing the wind to carry the pollen from one plant to another. The first is the better method, but the chief condition is isolation from other plants, pollen being brought to it from one or more plants; and when this is done the portions of the corymb operated upon by different pollen, should be indicated with small parchment tickets. Having obtained by this means flowers of excellent form and colouring, it will suffice for some years to keep the batches of different colours apart in pits or houses, distant from each other, and permit cross-fertilisation to take place. The result will be good for a time, but at length there will be reversions, more or less marked, to the earlier forms, and crossing by hand on isolated plants will have again to be had recourse to.

THE BEST VARIETATED-LEAVED PLANT FOR FILLING A HANGING BASKET: F. B. The best is a matter of taste. For a hot-house, there are *Cissua discolor*, *Cyrtodeira fulgida*, *Pothos argyrea*. For a greenhouse or verandah there are *Siphonophora europaea variegata*, *Sedum Sieboldi*, *Saxifraga sarmentosa*, *Fuchsia Surway*, *Pelargonium Mangelsii*, *Leucophyta Browni*, very slender plant, with grey stems and foliage; or *Mesembryanthemum confertiflorum variegatum*.

VINERIES: Vine-planting. The new house is not built according to modern ideas, but good Grapes can doubtless be grown in it. The space in the front need not be wasted, Grapes growing just as well on that part of the stem which is vertical as on the oblique parts, that is if you do not crowd the Vines with plants in pots. The best Grapes are grown on Vines planted in inside borders, with access to an outside one; but such borders require more attention, and are expensive in keeping them in a healthy condition. The "winter rains" do good not harm to the Vines, and it is only when early forcing is carried on that the border needs warmth, and protection from the elements. A border 9 feet wide would support Vines for five or six years, and would then require to be renewed or made wider, or both. If you have a border outside and another inside, they should be on one level for some distance, say 1½ yards from the front of the vinery, being continued with a moderate slope to the margin. Could you not lift your old Vines that are planted in the outside border in September, make a new border inside and out, and build a new front wall resting on piers? You would then have the opportunity to make the new borders of one level. If the Vines are planted inside there will be no need of holes in the wall to put the Vine stems through, and the roots will extend to the outside by means of the wide openings beneath the foot of the wall. The Vine stems can be protected from the heat given off by the hot-water pipes by enclosing them (the stems) in wooden pipes or pieces of cork, and the roots just below the pipes by a thick mulch or a line of stout planks.

COMMUNICATIONS RECEIVED.—J. B.—W. E. G.—Dr. S.—J. D. F. W. B.—M. Coghlan.—G. Trautman.—E. C.—E. C. D., Oodong.—H. C. P.—A. P.—G. E.—R. L. H.—D. McD.—H. Morris.—H. W.—Brown.—G. Brown.—H. B. Cowan.—A. R. B.—T. B.—G.—G. Gowen.—J. E. P.—C. de la, Antwerp.—L. E.—N. Y.—E. A.—L. H. B., Ithaca.—J. H. C. S.—J. D.—T. B.—St. Leonard.—J. O'B.—E. C.—W. A. C.—D. J. H.—C. C.—W. T.

SPECIMENS, PHOTOGRAPHS, &c., RECEIVED WITH THANKS.—Dr. B.—R. F.



THE

Gardeners' Chronicle.

SATURDAY, FEBRUARY 27, 1897.

VARIATION AND ENVIRONMENT.

CAREFULLY studying the various articles which have recently appeared in this connection, and especially that of the Rev. G. Henslow in your issue of January 30, I am forced to the conclusion that scientific botanists do not take into sufficient account the capacity of plants to sport, and sport into extreme types, under such normal conditions of environment as preclude the idea that a change in these has constituted the stimulus to the variation observed. Mr. Henslow remarks, "That no new true variety will arise if the environment be constant is a belief based on a large amount of observation, but that new variations only arise in consequence of 'changed conditions of life,' as Darwin and Wallace call them, is accepted, I suppose, by all evolutionists in Europe. Indeed, these essays, *The Survival of the Unfit*, J. H. Bailey, New York, abundantly corroborate this belief." Further on he quotes Mr. Bailey thus: "I believe that the greater part of the present differences in organisms are the result, directly and indirectly, of external stimuli," and accepts this conclusion as correct, deducing from it that "mutability depends upon environment." Finally, Mr. Bailey's three suggested causes of variation are quoted, viz.: "(1), External stimuli; (2), Internal acquired energy (as seen in sports, primarily due to cultivation); and (3), Sexual intermixing."

Now all these quotations and axioms, except (3), as last quoted, which is outside the present mission, point in one direction, viz., that without a change in the environment, plants remain constant, and with this point I propose to deal in connection with Ferns, that particular family of plants which I have now assiduously studied for many years in its varietal aspects, both as a selective cultivator, and what is particularly to the point, as a searcher for new forms in the wild state.

With regard to Ferns, our British species especially, there is, I imagine, no class of plants existing in the world which has been the object of so much research in their wild and perfectly uncultivated state, and certainly none which has yielded such a rich harvest of wild departures from the normal types under natural conditions of growth. The distinct and constant varieties thus found number certainly many hundreds. This being so, I am, I think, perfectly justified in regarding the evidence afforded by the results as peculiarly to the point, and as the bulk of it is established beyond all doubt by records contemporaneous with the "finds," and made by more reliable authorities, it merits serious consideration by all evolutionists. The reason why it has not, to my mind, received this consideration so far is, that Fern-hunting has been peculiarly an amateur's hobby, demanding a great expenditure of time

and patience, and stimulated by a faith which can only be engendered by a certain amount of good fortune at the outset. Hence the enthusiasts, all told, are very few in number, and the truly scientific botanist is not found among their ranks, because his time is too much absorbed in systematic study and research in other and better-defined directions to permit of it. The immediate result of this is a tendency on the part of the scientist to relegate all the abnormal forms to the "garden" varieties, and to ignore the very important fact that the large majority of forms owe nothing whatever to the stimulus of cultivation, but originated under precisely the same conditions of environment as the millions of normal Ferns among which they were found.

All the typical variations, and among them some very extreme forms, were thus found, and although it is quite true that under selective culture their distinctive characters have in some cases become more developed in their progeny, in a large number of instances the original finds have not only survived—for Ferns seem to have no definite limit of life—but they have been propagated by division as well as by spores; so that every good collection affords plenty of original material for studying what variation can arise, independently, as I maintain, of any of the three causes suggested by Mr. Bailey. For instance (and here be it observed, I have some of my own "finds" in mind, as well as those cited), what "external stimuli" can we imagine capable of transforming the normal frond of *Athyrium filix-femina* into that remarkable peruciate cristate form known as A. f.-f. Victoria, a solitary plant of which was found growing with the common form in abundance around it, under purely natural conditions, "by the side of a by-way on the margin of a wood?" How can we imagine an adequate stimulus so extremely local in effect that no second find of the type has turned up among all the Ferns of the world? "Internal acquired energy" there must, of course, have been in the spore or the prothallus; but Mr. Bailey confines this cause to "sports, primarily due to cultivation," with which category this plant cannot possibly be classed. This extreme case is a type of many. The hunter descends into a glen untouched by the hand of man, and seldom by his foot. Ferns of various species lie the rocky banks and peep from every crevice, hundreds and thousands; all may be without a trace of variation, and suddenly in one of the myriad chinks in the self-same rock-formation or bank of drifted alluvial in which the rest are rooted, and mingling its roots and fronds with theirs, he finds one, and one only, of an altogether different type. Removed and put under culture, changing its environment thus very completely, it not only retains its peculiar form from generation to generation of men, but even its progeny may be true to its type, the great change in environment producing no appreciable subsequent effect whatever.

Again, I ask where is the external stimulus in such a case as this? and add, why has the subsequent stimulus of protective culture no apparent effect whatever upon a variation already presumed to be caused by a difference in environment, which is quite inappreciable to investigation? Surely, were difference of environment the exciting cause in these wide variations, we should expect to find traces of similar effect in the other plants with which it was actually mingled in the vicinity; but evidence of this sort is rare, or rather, non-

existent, since although it occasionally happens that several independent plants are found near together, they are generally so identical in type as to be ostensibly seedlings derived from the original sport, which may or may not be discriminated from the rest by its larger size. Where, too, in all these cases, can we find evidence of the changed conditions of life, to revert to Darwin's and Wallace's phrase already quoted, as essential to the appearance of new variations? In the case of roadside finds, which are not infrequent, the conveyance to them by wind of a certain amount of manurial dust, may be urged as possible, and I yield to the argument that here, at any rate, purely natural conditions are vitiated, while doubting much if the varieties even here are in the least induced thereby; but in glens, mountain-sides, and rocky Fern-habitats in unfrequented spots, there is nothing that I can conceive constituting such a change of conditions of life as would induce an altogether different structural plan, and one, moreover, which in some forms of variation is actually adverse to its continued existence. An *Athyrium*, for instance, I found in a wood in Ireland, was so heavily crested, moreover so brittle in structure, that it was dwarfed and battered to pieces by the little wind it met with there; but under glass it became a fair-sized plant. Another point is, that these varieties start as such from the prothallus, and their peculiarities do not originate as the plant grows up. Hence, we must antedate the sport as prior to the existence of the Fern itself. The parent Fern of an initial sport must be externally normal, and it is this which must be so affected by "changed conditions of life," that its spores become modified; yet, as I have said, the general environment is at once normal, and has evidently undergone no essential change of climate, temperature, soil, aspect, or anything else, beyond the ordinary vicissitudes of weather, it and the plants in it have been subjected to for ages.

It seems to me, therefore, in view of these facts, which can be easily demonstrated, the belief "that no true variety will arise if the environment be constant," cannot possibly be upheld, since many true Fern varieties have undoubtedly arisen where the environment has been unchanged. "External stimuli" are also exceedingly difficult to bring in as factors, as, under the circumstances described, we can hardly conceive these to be concentrated upon one normal plant in such a way as to cause it to modify its spores—or a single spore, it may be—so profoundly, as to yield so different an offspring, endowed moreover with such constancy of reproduction of its own particular type, that subsequent entire change of environment fails to alter it. Internal-acquired energy, in these cases, cannot be derived from external stimulus, nor seemingly from any special stimulus of environment; while "sexual intermixing" is out of the question where the crossing can only be between normals of same species. All these causes failing, therefore, to satisfy my mind, I am driven to the conclusion that, so far as the causes of initial variation are concerned, we are absolutely in the dark at present. Once a species sports, we can easily conceive that the subsequent variation in the progeny to which our horticulturists, agriculturists, cattle-breeders, &c., owe so much results from the varied *modus vivendi* arrived at by the conflicting elements of being present in the conjoined primordial germs; but the cause of the first departure

is a profound mystery, as is the point of its commencement. In the Fern, it may be in the spore, it may be in a modified atherozoid or archeogonial cell, or it may even be in some subtle local modification of the parental Fern, which consequently produced the modified spore; but in any case, for the time being, the origin of life itself and that of its subsequent initial variation must be classed with first causes, and therefore with the unknown, if not with the unknowable. At any rate, it is well, as research proceeds, to guard against the accepting as "beliefs" of theories which cannot be substantiated, since the history of science is only too rich in stumbling-blocks of this description. Another moral which I deduce from the foregoing is, that the study of domestic plants alone is not sufficient; what is needed is a more extended study of plants in the wild state. This, I am certain, would lead to considerable modifications of the ideas at present held of the greater variability of plants under culture. Most of these owe their variability not so much to the culture, as to the fact that they are the progeny of "sports," and hence more apt to vary again for reasons above cited; but by my own opinion, based on experience in my particular line is, that original "breaks" occur just as frequently under natural conditions as under culture, though the examples being isolated and scattered about among the myriads of normal plants, are infinitely more liable to escape observation than where the plants from seed to fruition are under the trained eye of the grower ever in the *qui vive* for novelties. Chas. T. Drury, F.L.S.

NEW OR NOTEWORTHY PLANTS.

CYPRIPEDIUM TRIUMPHANS = SALLIERI HYEANUM × GENANTHUM SUPERBUM.

ONE more novelty of foremost rank was recently seen in flower in the collection of Thomas Statler, Esq., Stand Hall, Lancashire. The dorsal sepal is of rhomboid form across the centre, and lessening slightly towards the base, and less so towards the apex. The blood of the fusion is very marked, and enhances the quality of the limb which is coloured, in detail, too, back as well as front. The petals and pouch resemble the pollen parent in form and colour. There were two flowers on the plant, one of which was sent to Mr. Macfarlane for figuring in colours, and the other remained on the plant.

The rhomboidal dorsal sepal is of the size of that of the largest *C. Sallieri*, and the two-thirds of its surface has a yellowish shaded green ground, upon which chocolate or rather magenta coloured spots, the size of Sweet Pea seed, are crowded together almost to overlapping, although keeping their orbicular shape. These spots get smaller and brighter to wards the apex. The colours are decided, and give character to the flower. The under portion of the back differs from the front in having emerald green lines radiating from the base towards the apex, stopping short of the white ground; and ground colour is flushed with pink, and narrowly margined with white. The inferior sepal is in form ovate acuminate, two-thirds of the size of the dorsal sepal, has a greenish ground colour adorned with a white margin, the apex being particularly noticeable. The petals, as in *C. œnantium superbum*, are of a vinous red colour, with a yellow margin, which is very striking. The pouch is identical in colour with the petals, and excellently formed. The staminate is very large, more coriaceous than the staminate of either parent, and has an elongated tubular shaft attaching it to the basal limb, from whence it springs. The colour of the cordate extremity is of a fine yellow shade. It has the appearance of being of good constitution, and bears a longish peduncle, always a desirable feature. *J. Anderson.*

ORCHID NOTES AND GLEANINGS.

DENDROBIUM KENNETH (BENSONLÆ & MACCARTHIE ?). (See Fig. 37, p. 135.)

DENDROBIUM MacCarthie, a plant generally considered difficult to grow, has flowers of such beauty, which differ so greatly from those of other species, that crosses obtained from it are extremely desirable. So thought Norman C. Cookson, Esq., of Oakwood, Wylam, near Newcastle, when he and Mr. Wm. Murray, his gardener, crossed *D. MacCarthie* with pollen of *D. Bensoniæ* in 1899. The seeds ripened, and were sown in July, 1890, and the plants made such rapid progress that he was enabled to show it for the first time in flower on March 10, 1896, a fact duly recorded in the *Gardeners' Chronicle*, the plant having the Award of Merit of the Royal Horticultural Society.

Mr. Cookson again exhibited a plant at the meeting on February 9 last. By a mistake when it was first exhibited, *D. Bensoniæ* was placed as the seed-bearer, but Mr. Cookson informs us that he has never been able to get a pod of seed on that species. Those who are not used to the vagaries of colour in the crosses and hybrids would expect to see more of the rose-colour and purple of *D. MacCarthie* blended with the cream-white of *D. Bensoniæ*, but these are two tints which when apparent in the parents often quite disappear in the offspring. The form of *D. MacCarthie* in the cross is strikingly shown in the long segments, and more especially in the elongated form of the lip. The colour of the flowers is cream-white, with a downy purple veining on the disc.

DENDROBIUM WARDIANUM GANDIUM.

A good example of what is often named *D. Wardianum album* is sent by Mr. Wm. Bolton, Wilderspool, Warrington. The lower is of good size, pure white, with a yellow base to the lip, on which are two small but clearly defined red-brown blotches. *Aproros* of these white varieties of *D. Wardianum*, it may be mentioned that they not only vary in size from one year to another, but they are more especially liable to vary in the size and depth of colour of the red-brown spots on the lip. A few years ago Chas. Wain, Esq., The Uplands, Selly Hill, Birmingham, noted that a white *D. Wardianum*, whose flower had been remarkable in that the brown marks on the lip had been previously almost entirely suppressed, on flowering again had them as well defined as in some ordinary *A. Wardianum*.

DENDROBIUM WARDIANUM VAR.

The beautiful *Dendrobium Wardianum* is at this season one of the most beautiful of Orchids, and much variety is displayed in examples received from different correspondents. The largest and most richly-coloured comes from Mr. W. H. Young, Orchid-grower at Clare Lawn, East Sheen. This flower is excellent in every point, and especially in the pure whiteness of the petals, and deep rich claret-purple tints to the sepals, petals, and lip. The sepals are likewise tinged with purple at the back, which is visible from the front through the substance of the flower. The petals are heavily tipped with rich claret-purple. The labellum is of a bright orange hue, and possesses the usual red-brown blotches at the base; and the apex is pure white, except the tips, which are claret-red. *J. O'B.*

RENANTHERA COCCINEA.

This quaint and interesting Orchid is now in bloom with us. The plant is bearing sixty blooms on a five-branched raceme, which are of a bright brick-red colour. It is the more interesting because of its peculiar mode of growth. Our plant is climbing a pole about 9 feet high—à la mode de *Speed de Chatsworth*—and is growing in a span-roofed structure, 40 feet by 20 feet by 11 feet, and this where the temperature during the continuous winter of 1894-5 frequently fell to 35° Fabr., the house being fully exposed to the east. Up to two years ago I grew the plant in a small stove, where it was exposed to the sunlight as much as possible; but not being satisfied

with the progress it made, it was placed at the cooler part of an intermediate-house, which was in use for exhibiting all kinds of hard and soft-wooded plants, including Orchids. I find that to be well wetted with the syringe three times a day in summer and once in winter accords with its requirements. The progress made during the past two years by the plant in the intermediate-house has been rapid, and the foliage is lustrous and healthy looking. Doubtless many plants of *Renanthera* are grown in too much heat, and if those gardeners who have more than one plant would try one or two in a temperature of 50° to 60° in winter, and 70° in summer, they would be well satisfied with the results. By the way, have any of our Orchid hybridists taken *Renanthera* and *Vanda* in hand? In case any of them requires pollen masses to experiment with, I should be pleased to give it. *W. J. Grace, Bickton, Fordlingbridge.*

THE FLOWER INDUSTRIES OF SOUTHERN FRANCE AND PARIS.

FROM December till May is the season for the flower industries. It is only within the last fifteen years that the commercial culture of flowers in France has attained its present large proportions. The area now devoted to flower-farms, where entire fields, not beds, are cropped with the most lovely and odiferous flowers, lies in the area twenty by ten miles in extent which takes in Cannes, Nice, and Grasse. The climate as well as the soil are especially suitable to the enterprise in question. Sub-divisions of the area have also their peculiar floral out-puts. Cannes, Nice, and Antibes are reputed for their famous Roses; Grasse for its Jonquils, Violets, Tuberoses, Jasmine, Mignonette; Hyères and Fréjus, for Violets; the suburbs of Cannes, for Pinks. Bulbous plants succeed everywhere.

In the matter of profit, the districts of Antibes and Cannes rank first; excellent outputs are also secured round the Golfe de Juan and Beaulieu. The total area actually cropped with flowers is nearly 1800 acres, of which the commune of Nice represents 600, and Cannes, Antibes, Mentone, and Grasse each 250 acres. The villa residences commence to encroach on the flower lands, but the house proprietors themselves grow flowers, and that, with letting their villas, helps to make up the means of living. The very large growers of flowers resemble, it may be said, large farmers; they sell their produce to the laboratories or to contractors, or they enter into partnership with intelligent labourers, and divide profits. This is the *metayer*, or partner, system applied to floriculture. In the winter season the culture is confined to the raising of cut and ornamental flowers. In summer the aim is to cultivate for the laboratories, that is, distillation for perfumery, to prepare essences, pomades, and scented "waters;" it is also the season for gathering-in seeds. It is a popular error to suppose that no skill or outlay is required to produce the supplies of flowers for northern latitudes between Christmas and May. Flower culture exacts capital and increasing care. Doubtless many conclude that the flowers grow naturally in the open air—this is an error; some do, but the most delicate and the most beautiful species are raised under glass. In the regions of Nice, Grasse, and Mentone, there are 200 acres of land covered over with glass frames, each frame costing at least 7s, so that much capital is sunk in the industry. Other flowers are raised under canvas tents, and many are protected by matting. Roses and Pinks are grown under glass; while white Lilac, Lily of the Valley, and also Pinks are forced into bloom in the space of eighteen days. The Lilac is white, because grown in darkness, but when exposed to the sun, it rapidly assumes its tints, and no fewer than 200 shades of Lilac have been recorded—a collection the late M. Chevreul never could delineate. It is in the bloom and colour-producing efficacy of the sun that much of the secret of flower farming resides. Violets are generally grown beneath the shade of Orange trees, or under the shadow of walls. The Russian variety is classed first, then the Queen Victoria, which is of a deeper hue.

Flower-culture could never have succeeded were it not for the railway companies facilitating the industry. They guaranteed the quickest trains from the South to the North of France, accepting the flowers packed in special oster-baskets, and limited to parcel-post weights, never exceeding 11 lb. It is thus that Nice, and other places, supply London, Berlin, Stockholm, &c. None goes to St. Petersburg: the parcels, even for the Imperial family, are too severely handled while passing through the Customs. Germany is the best customer of France for flowers. The prices of flowers depend upon the weather and fashion. Formerly, Berlin gave the top prices, now all are on a level; while the cultivators have their own daily latest market quotations published as if it were corn, pork, or coal. At Cannes, Roses range from 2*l.* to 7*s.* per dozen; Pinks, 1*d.* to 4*s.*; Orchids, 1*s.* 6*d.*

the essence. Nice and Grasse work up yearly 800 tons of fat, and 500 of oil, in the preparation of perfumery. It takes 25 tons of Rose petals to prepare 2½ lb. of essence of roses, the latter representing £100. In 1892, the railway station at Cannes alone forwarded 900 tons of flowers, valued at £160,000. The profits of flower farming fluctuate between 8 and 18 per cent.

France alone consumes the moiety of the total of her flower out-put. Paris is the great consumer; the capital needs perfumes and flowers for its *fêtes*, weddings, and funeral ceremonies. It wishes flowers upon mantel-pieces above a blazing fire—for bouquets in the eyes of French people mean gaiety. A bunch of Parma Violets can glide into a muff, can decorate a button-hole, or ornament a corsage.

The wholesale market of Paris, with which the

In addition to the special "local" flower markets of Paris, there are 230 *floristes*—there were only 45 in 1870—or flower shops, that have magnificent contents along the leading boulevards and main thoroughfares. Their windows are often marvellous displays of floral wealth, united to art. The contents of each window constitute an object-lesson in the harmony of colours, in the arrangement of shades and of volume, of flowering plants [the taste is sometimes questionable, witness the large ribbon bows and satin streamers intermingled]. What wreaths, what bouquets, what painting of the Lily! All is the work of the special lady shop-assistant, known as the *coloriste*; she receives £12 per month for merely dressing the window, and inventing combinations for bouquets. The *floristes* in Paris are wealthy, like their customers, who command bouquets and plants varying from £4 to £20. Many of the *floristes* have their own greenhouses in the suburbs, and take by contract what is most beautiful for sale by private growers. They possess every flower "out" of season, of the very newest variety, with the freshest of bloom, and displaying the brightest colours.

Etienne Comber.

C R A T E G U S .

(Continued from p. 129.)

C. DOUGLASSII.—One of the largest-growing of the genus, attaining a height of more than 50 feet. It is a native of Western North America, and was discovered by David Douglas in the valley of the Colorado River, and introduced in 1827. The leaves are obovate, elliptical, or cuneate, glabrous, and of a bright glossy-green, averaging 2½ to 3 inches in length and width, the upper two-thirds being serrated. The wood is armed with short, stout spines three-quarters of an inch long. The abundant white flowers are produced in broad cymes during May, each flower three-quarters of an inch across. Its small fruit, which ripens in August, is black and shining, and falls soon after ripening. Sargent says that the tree attains its greatest size in the valleys of Western Oregon and North California, growing most freely on the margins of streams, where it often forms impenetrable thickets. At Kew it is the largest of the Thorns.

C. flava.—A small tree of spreading habit, with darkly-coloured wood, well furnished with spines, 1 to 1½ inch long. The leaves are broadly ovate or obovate, as long as the spines, crenate, slightly lobed towards the apex, and slightly pubescent on the prominent veins. The corolla is ½-inch across, white, and the lobes of the calyx are very markedly glandular. The fruit is pear-shaped, ¾-inch long, and ripens late; its colour is greenish-yellow. It is not one of the most desirable Thorns, neither flowering nor fruiting with much freedom in this country. A native of the United States.

Var. elliptica (Sargent) is smaller and more shrubby than the type, and has thicker, broader leaves. It differs also in the fruit, which is small, and sometimes red, instead of yellow.

C. mollis.—There are few Thorns from either the Old or the New World which are better worth a place in the garden than this. It is one of the largest-flowered of the species, and its fruits are also of good size, and finely coloured. Its nearest ally is *C. coccinea*, and judging by the numerous forms in cultivation at Kew, it has probably hybridised with that species. It may, however, be generally distinguished by its larger and more pubescent leaves. In some cases the pubescence is so abundant that they are quite soft to the touch. The flowers are produced in large flat corymbs, and are fully 1 inch across; they are white, with a dark red ring in the centre. The fruits are mostly spherical, and about three-quarters of an inch in diameter, and of a deeper but not so bright a red as those of *C. coccinea*. Unfortunately, they fall early, and the trees are here of them by the end of September. *C. mollis* is from the United States, and is a tree of vigorous growth reaching 20 to 30 feet in height.



FIG. 37.—DENDROBIUM "KENNETH": FLOWERS CREAMY WHITE; LIP PURPLE AT THE BASE.
(SEE P. 134.)

to 3*s.*; Narcissus that sell at one time at 1*d.* each, can at other times be had at the same price per dozen. Occasionally, taste runs in favour of white, red, or yellow colours. During the General Boulanger craze in France, and especially Paris, red Carnations obtained fancy prices, because the favourite flower of the then "hero of the day;" of late, these flowers do not sell at all.

Flowers for transport are generally cut before sunrise; the best only are chosen, and are packed with cotton, as in the case of Camellias, Roses, and such Orchids as do not stand the journey, or with tissue-paper, or even both. Acacia or Mimosa generally lines the baskets.

Flowers as a rule, are not distilled at Grasse, &c.; but the leaves, bark, seeds, roots, &c., of odiferous plants are. The perfume in the other cases is secured by pressing the petals between layers of auct or lard; when the perfume has been absorbed, the grease is dissolved in alcohol, which in turn absorbs

writer only deals, is held in the central cross-ally of the Halles Centrales. In summer—April to September—the hours are 3 to 8 A.M.; in winter, 4 to 9. The right-hand side of the ally is reserved for the flowers from Southern France, as delivered by the railway vans; the left side is allocated to the floriculturist of Paris and its suburbs, who have forcing-pits and greenhouses of their own. There are about thirty-two licensed retail sellers, who pay 4*d.* for their stand of as many hours. There are two sworn auctioneers, who give security each for £400; their fee is 5 per cent. The thousands of small baskets from Nice, &c., of 4 to 11 lb. weight, are sold by the dozen; if possible, the same kind of flowers are disposed of simultaneously. Then there is in the distance a regiment of hawkers, who come to buy from the auction salesmen; they have a handcart, which they hire for 6*d.* a day, paying 2*d.* more for the liberty to trundle along the streets; these are the subalterne distributors of the floral harvest.

C. punctata.—A well-marked and handsome Thorn, with obovate leaves, which can always be recognised by the prominent parallel veins running from the midrib. The blade extends down each side of the petiole almost to the base, the upper surface being dark green and glabrous, the lower one paler green and pubescent; the leaves are 2 to 4 inches long, and irregularly toothed, except at the base. The wood is grey, and sparsely set with straight, stout spines, $\frac{1}{4}$ inch long. The fruit is almost globular, about 1 inch in diameter, and dark red in the typical form. Var. *santhocarpa* (or *aurea*) has bright yellow fruits; var. *striata* has them red with yellowish streaks near the base; and in var. *brevipina* they are of a dark dull red. In all the varieties the fruits are speckled with small, pale-coloured dots. The flowers appear in May in large flat corymbs. This is a small tree, 15 to 20 feet high, in this country forming a low spreading head. It was introduced from North America in 1746. The species bears some resemblance in its foliage to *C. tomentosa*, and has by some authors been made a variety of it; but the smaller, more oval, and always erect fruits of *C. tomentosa* (not to mention other characters) make it abundantly distinct.

C. spatulata.—At Kew this is a small, flat-headed tree a few feet high, with light grey, thin branches, but in the United States it gets to be 18 feet or more high. The leaves are spatulate, firm and glossy, $\frac{1}{2}$ inch long, the blade narrowing at the base to a narrow strip at each side of the petiole; they are sometimes deeply three-lobed, or are undivided, with merely crenate margins. During some seasons the foliage remains on the tree, and keeps green up to the new year. The flowers are white, half an inch across, and appear in May. The haws are perhaps the smallest of any species in cultivation, being about one-eighth of an inch across; they ripen in October, and are then bright scarlet. This interesting and distinct Thorn is a native of the Southern United States, and was originally discovered by Michaux in South Carolina. Lindley figured it in the *Botanical Register*, t. 1846, as *C. microcarpa*, an appropriate name, but of later creation than the one here used.

C. tomentosa.—One of the most distinct of the North American Crataegus, and although bearing some resemblance to *C. punctata*, is easily distinguished from it by its very different fruits. It has ovate leaves 3 to 4 inches long, which are irregularly toothed except towards the base, dark glossy green and almost glabrous above, but covered beneath with a fine tomentum. The white flowers are $\frac{1}{2}$ to $\frac{3}{4}$ inch across, and appear on pubescent corymbs later in the season than most of the Thorns. It is not abundantly armed with spines; the few it possesses are 1 to $\frac{1}{2}$ inch long, and of a light grey colour like the branches. The fruits of this species always stand erect, and are of the same shape as the haws of *C. Oxycantha*, but larger; they are of a yellowish colour when ripe. The calyx-lobes adhering to the apex of the fruit are linear and toothed. This is a tree 10 to 15 feet high, and was introduced from the Eastern United States by Lee and Kennedy, of the Hamersmith Nursery, in 1765.

C. unguifera.—This is probably the dwarfest of all the Crataegus, being generally a bush 2 feet to 3 feet high. It is said, in rare instances, to become a bushy tree 10 to 12 feet high. It has slender needle-like spines about 1 inch long. The leaves are spatulate, and from $\frac{1}{2}$ to 2 inches long, with crenate margins; they are glossy dark green above, and pubescent on both surfaces, but especially so beneath. The creamy-white flowers are solitary or occasionally in pairs, and $\frac{1}{2}$ to $\frac{3}{4}$ inch across. They are followed by pear-shaped fruits $\frac{1}{2}$ to $\frac{3}{4}$ inch long, greenish-yellow, with large calyx-lobes still adhering at the apex, which are nearly $\frac{1}{2}$ inch long, strap-shaped, pointed and toothed. This species is one of the late-flowering group, and is often pretty in the early weeks of June. Its dwarf habit, solitary flowers, and large sepals, make it one of the most distinct. It was introduced from the United States by Bishop Compton in 1713.

C. viridis (syn. *C. arborescens*).—A small tree,

reaching in the United States, a height of 90 feet or more. The leaves are mostly obovate, bright green above, glabrous on both surfaces, and minutely crenate, occasionally slightly lobed, and from $\frac{1}{2}$ to 3 inches long. The wood is, as a rule, devoid of spines, but what few there are, are about 1 inch long, sharply pointed, and pale-coloured. The flowers are white, three-quarters of an inch across, and produced in May; whilst the fruit is bright scarlet or orange-coloured, and about three-eighths of an inch in diameter. This species does not appear to be of great value in Britain, neither flowering nor fruiting in great abundance. *W. J. Bean.*

FLORISTS' FLOWERS.

GARDEN PINKS.

OUR garden Pinks can be appropriately divided into a few types. There is the section of white Pinks represented by Mrs. Sinks, Her Majesty, Snowflake, Mrs. Lakin, alba, and fimbriata. These are valuable as market Pinks, and in the western and other parts of Middlesex they are grown extensively in the fields, the plantations lasting for a considerable time. Her Majesty is one of the best forcing Pinks, and if the plants have been grown in the open all the summer, they may be potted in the autumn, placed for a time in a cold frame, and then brought gently on in warmth so as to flower in early spring. Then there are the ordinary garden Pinks—Early Blush, Paddington, Lord Lyon, Souvenir de Sale, Anna Boleyn, Ernest Ladhams, and others, which grow striking masses in the mixed border. The dwarf-growing, small-flowered, and profuse-blooming Bedford types form a section of themselves; they make a suitable edging to the taller varieties, and the short stiff stems need no tying. For bunching purposes they equal any other variety of Pink. Then there are the florists' laced varieties, which, though chiefly grown for exhibition, are yet, in many cases, excellent border flowers, particularly the varieties Modesty, John Bull, Mrs. Dark, Mrs. Thos. McCrorie, and a few others. It is sometimes said the laced Pinks do not bloom freely, but this is incorrect, as they generally flower with remarkable freedom. A few of the finest laced varieties, from the exhibitor's point of view, will be found in Boiard, Devise, Empress of India, Favourite, Harry Hooper, Mierva, Princess Louise, The Rector, and Zoe. Some excellent varieties are grown in the North, but they are not so well known in the South as they deserve to be. One type of the florists' exhibition Pink—the white-and-black, as it is termed—is, it is feared, becoming extinct. In this Pink no marginal lacing exists, and the fine stout, well-rounded petals surround a dark-coloured centre, and make a striking contrast. To see this type at its best, the flowers require more care when developing than the laced Pinks, and it is prudent to bloom them under glass, and neither sun, wind, nor rain should be permitted to dim their lustre. High cultivation only will produce fine exhibition Pinks. The bed must be prepared by heavy manuring, deep digging and pulverising the clods. The time to plant is the last week in September, or soon afterwards. The bed should be raised above the surrounding level by fully 8 inches in the centre, and fall away to 4 inches at the edge. This is done to secure dryness at the root during the winter. Early planting ensures good root-hold, and there is then less danger of the plants being loosened by frost. Still, it is always well to press the plants down firmly into the soil after a thaw, and before a top-dressing is applied. The sooner in the year the top-dressing can be employed the better. The usual method is to pass horse-droppings and rotten leaves through a half-inch sieve, and when this is applied to place a thin row of sprays of Spruce Fir between each line of plants, and this, standing a little above the plants, protects them from the cold winds of March. This is a precaution that is, however, required more in the North, but it is a sensible precaution in the South notwithstanding. Early in April the branches can be removed, and another similar top-dressing afforded. *R. D.*

LYCORIS SQUAMIGERA.

This Japanese species of *Lycoris* is apparently hardy in the neighbourhood of London. In fig. 33, p. 137, we have pleasure in presenting a view of some plants which flowered at Isleworth, in the garden of Mr. A. Worsley, to whom we are indebted for the photograph. In an accompanying note Mr. Worsley says that the plants were growing beside an unheated Peach-wall in the open, and that the bulbs received no protection whatever at any time. It is, therefore, a plant well suited for planting in the narrow borders, with southern aspect, that skirt many of the plant-houses in most gardens, and where the Gurnsey Lily, Tritonias, Montbretias, and similar bulbous plants do well. *Lycoris squamigera* generally blooms in July or August; the flowers are fragrant, and rosy-lilac in colour. The peduncle occasionally grows 3 feet high, and bears generally about five or six flowers in an umbel. The perianth is about 3 inches long, and the tube an inch long. The leaves are produced in spring, and are more than a foot in length, and an inch in width at the centre.

NITRATE OF SODA VERSUS SULPHATE OF AMMONIA.

THE comparative value of nitrogen for fertilising purposes in the form of sulphate of ammonia or of nitrate of soda, has been strongly debated in this and other countries, and has been the subject of numerous experiments upon many different kinds of plants, and in different descriptions of soils. Professor Wagner believes that for most crops it will require 100 lb. of actual nitrogen in the form of sulphate of ammonia to produce as large results as 90 lb. in the form of nitrate of soda. In other words, nitrogen in nitrate of soda he considers one-tenth more effective than in the form of sulphate of ammonia. These results seem to confirm the investigations of other experimenters, especially if lime be added with the nitrate. The sulphate of ammonia has very frequently been found to retard or destroy the germination of seeds if they come in contact with it, but there is much less danger from the nitrate. On certain soils, especially those of a light character, a mixture of sulphate ammonia and nitrate of soda is to be recommended.

It must always be remembered that nitrate of soda is more easily washed away into the soil by heavy rains than is sulphate of ammonia, therefore the former should never be applied until there is a crop ready to take it up, as it dissolves in the soil. Liquid-manure hastens the germination of most seeds, and has a permanent good effect upon the young plant by the rapidity with which its ammonia gets converted by decomposition into nitrate. *J. J. Willis, Harpenden.*

METHODS OF PROPAGATION.

(Continued from p. 104.)

BY MEANS OF ROOTS.—The herbaceous perennials plants may mostly be increased by these ready means, as well as by simple division, which is an every-day means of increasing these plants. That which I wish to bring to the notice of the reader is the increase of stock by the denudation and cutting up of the larger roots of some of these perennial plants, which can only be profitably increased in this manner. Some of these plants form nodules or tubers, which are generally stores of starch, intended to provide nutriment for the young plant when making growth in the spring; and just as the hibernating animals lay up abundance of fat before they retire to their long winter sleep, so do some plants store the vegetal analogue of fat—starch. Familiar examples of this are the Potato, the Yam, and the Jerusalem Artichoke. But very many other plants present us with this phenomena in a less marked degree, and thus are with great facility propagated by lifting the plant from the ground, or out of the pot in which it is growing, washing away all the soil from among the fibres, and then with a sharp knife dividing the root into short lengths, each bearing one or two nodes, or, if possible, adventitious buds.

THE SOLOMON'S SEAL.

[or the so-called Chinese Artichoke, *Stachys tuberosa*] will be a good typical plant to begin on, as the mere eye can see at a glance where to divide them. Each piece of the Solomon's Seal can then be potted or bedded out, and it will make a good plant during the following season, when it will be found a most useful plant, either to force gently for the decoration of the conservatory or border, or to furnish cut spikes for table decoration. Another useful plant, the *Aspidistra* and its variegated form, now used by thousands for house decoration, and perhaps one of the toughest subjects we have to withstand the effects of close dry rooms and neglect, is increased readily by this method, every leaf or leaf-bud being capable of making a plant when properly treated.

Jannoch of Dersingham, and the Continental growers, by the million, while some are kept in a dormant state by artificial cold, and only brought into use when naturally-grown flowers are out of season.

RICHARDIAS.

This suggests other universally-liked plants, the *Richardias*. These, with the gorgeous-leaved *Caladiums*, the *Alocasias*, and *Anthuriums*, all belong to the same extensive natural order (*Araceae*), and are readily increased by cleansing the roots from all adherent soil, dividing them into small pieces each carrying a bud, which, by judicious treatment, will soon furnish useful plants, merely requiring to be bedded in light sandy soil, and kept moist and warm. As soon as young leaves appear they must be potted on, and if a

among abundance of foliage, whereas selected crowns might be cultivated with even greater facility than those of *Lily of the Valley*. I have no experience of *Astilbe* or *Spiraea astilboidea* and *S. Thunbergii*, but should judge them both to be equally amenable to this method of culture; while the lovely *Spiraea palmata* and *S. p. alba* are readily increased by division of the roots, securing good plump and hard crowns for the purpose of potting-on and forcing. *Experience.*

(To be continued.)

THE VERBENA.

SINCE the death of our old friend, George Smith, of Horsey, the *Verbena* seems gradually to have gone out of date; yet in the days of old Tweediana



FIG. 38. —LYCORIS SQUAMIGERA, GROWING IN A BORDER IN MR. WORSLEY'S GARDEN, ISLEWORTH. (SEE P. 136.)

LILY OF THE VALLEY

crowns, which have of late years quite revolutionised the florist's trade in this useful and elegant flower, and in its frozen and retarded buds, furnishes us with good spikes in hitherto unreamt-of seasons, are thus manufactured—parton the word. The roots of *Convallaria majalis* are fibrous and thick, whilst near the crown numerous adventitious buds form, some of which will produce flower, while others only furnish leaves according to age. By practice, the cultivator distinguishes these one from the other, and separates them by division in 3, 2, and 1-yr. old crowns. The 3-yr. old will bloom the next or the same year, and the others are placed in specially prepared beds of rich soil, lightened by the addition of sharp sand, and the growth is encouraged by liquid-manure and cultivation. Thus treated, they in two or three years develop into the large plump buds or crowns, such as are put on to the market by Mr.

propagating pit he maintained at a good temperature, a nice batch of plants is obtained. The cultivator who has but a smattering of botanical knowledge will note that all plants of the *Lily* and *Iris* tribes are amenable to this method of increase; but unless he read it he would not imagine that the *White Lily*, the *Yucca*, and the *Dog's-tooth Violet* belong to the same natural order, and the climbing *Smilax* to be a very near relative (*Asparagus*).

SPIRÆAS.

Another very useful flower for the florist is the *Hortia japonica*, called in my young days *Spiræa*, and I am somewhat surprised that this has not been taken in hand by growers, and treated in the same way as *Lily of the Valley*, in order to secure flowering-buds only; whereas now, even the best clumps imported from Holland and Belgium, are not always reliable, giving uncertain and unsatisfactory flower-spikes

and Donald Beaton's famous shot-silk beds, it was one of the gems of the flower-garden. How well I remember the *variora* Robinson's *Defiance* caused when it was introduced, this and *Antra*, a purple variety, and later, *Purple King*, carried the palm in their respective colours for some years, and no flower-garden was considered perfect which did not possess these varieties.

Afterwards we became indebted to the late George Smith for a class of *Verbena* better in the size of the truss, and in the greater variety of colour; and for many years the *Verbena* was held in the highest esteem as a bedding plant, and it also used to be successfully grown and exhibited as a pot-plant. I believe it will again occupy its former position as a bedder and pot-plant. During the summer of 1896 I saw some lovely beds, consisting both of self colours and mixed colours. We relied too much, until the *Egeonia* came into fashion, on the *Pelargoniums* and *Violas*, and notwithstanding both are well adapted for bedding, yet a change is

desirable, the eye soon gets tired of the sameness, and a greater degree of variety is more pleasing. It is not uncommon in these days to see plants raised from seed; these generally have a more robust constitution, but the beds lack the beauty of the named varieties, for it is impossible to properly mix the colours in unbloomed seedlings so as to be effective. At Enville I used to plant thousands of a bluish variety, called Enville Blue, as the next line to one of yellow Pascies, sometimes in the front line, and vice versa, with telling effect; indeed, the Verbena was one of the gems of the flower-garden in those days. I first used yellow Pascies in conjunction with the Verbena at Osberton, where at that time the bedding-out was very extensively carried on, and I well remember the satisfaction it gave to the late Lady Milton. It was at Osberton that *Viola cornuta* and *Resine* played such a prominent part, not only in the flower-garden, but in the gardening papers. Since those days we have raised *Violas* and *Pansies* of all kinds of shades and colours, but I question whether any of the newer varieties beat the old *viola cornuta* in its pleasing, lovely, soft tint. I need not dwell on the cultivation of the Verbena, for it is so simple and easy, that almost anyone can grow it, the only art is in the arrangement of the colours, pegging down, and regulating the growth. *Edward Bennett, Queen's Road, Egham.*

THE WEEK'S WORK.

THE HARDY FRUIT GARDEN.

By H. W. WARD, Rayleigh, Essex.

Grafting.—The modes of grafting are numerous, and all of them may be practised with more or less success. Different circumstances, such as size and age of the stock to be operated on, should generally decide the mode to be adopted. I will particularise two methods of procedure which are both simple and efficacious. These are whip-grafting (also known under the names of splice-grafting and tongue-grafting) and rind-grafting, and these are undoubtedly the best modes to follow. The nearer the stock and scion are to each other in point of size, the nester will be the union. The scions should consist of young, healthy, short-jointed, well-ripened shoots from 9 to 12 inches long, and should, as advised in a previous calendar, be selected, and the butt-ends laid in, a few in a bundle, in the soil towards the end of January, the stocks being headed back to the desired point a few weeks later. In proceeding with the operation, insert the knife in the stock 3 or 4 inches from the top, and cut off a wedge-like slice of wood in an upward direction, nearly halving the stock (if a small one), at the top sloping the remaining portion off to the bark immediately above a wood-bud. Then make a cross-downward notch at the basis of both oblique cuts, making corresponding cuts in the scion, both transverse cuts in this case being made in an upward direction to enable the latter being tongued into the stock in the process of grafting (see Fig. 39). The stock and scion should be prepared with a sharp knife to ensure clean surfaces when being made, so that the wood and bark even cuts fit closely together. The scion having been thus fitted to the stock, it should then be bound thereto with a band of raffia, beginning at the bottom and finishing at the top, where the matting should be made secure. This done, cover the matting with clay (to which a small quantity of cow-manure may be added) of the consistency of putty, making it firm, full in the middle, and tapering off at both ends. This will exclude air and rain, and yet preserve the graft in a moist state.

Rind-grafting is not only simple and efficacious, but also an expeditious way of propagating the Apple, Pear, Plum, and Cherry. Should grafts of these fruits fail, budding can be had recourse to in July and early in August—indeed, this method of propagation is the one generally practised in the case of Apricots, Peaches, Nectarines, Cherries, and Plums. Rind-grafting consists in making a longitudinal cut in the rind to the depth of about 1½ inch from the top of the beheaded stock, and in raising the bark or rind on either side of this cut with a pencil-like stick, rounded at one end and feather-edged, and pressing therein a scion of similar dimensions. The edges of the bark on each side should then be brought close to the graft, bound round and clayed as recommended above. Where there are several hundreds of thousands of young stocks to work, two pairs of hands are generally employed in doing the work—one in putting in the grafts, and the other binding and claying them as indicated.

THE KITCHEN GARDEN.

By W. PORE, Gardener, Highclere Castle, Newbury.

Asparagus.—Where a sufficiency of established roots of *Asparagus* is at hand, a few dozen roots may be lifted, and placed in a frame over a gentle hot-bed. Care must be taken to lift the roots with plenty of soil attached to them. Place a few inches of leaf-mould over the warm manure, and then put in the clumps closely together, and sprinkle over them a little fine soil. Give them a good watering with tepid water, and afterwards add 3 or 4 inches of soil evenly over all. The frame may be covered with mats or litter until the tops begin to show through, which will probably be in about a week. Plenty of light and air should then be given, and the produce will be equal in quality and appearance to that grown out-of-doors. Old plantations that may not yet have been put in order for the season, should be given a good dressing of rich, well-decayed manure, which may be forked lightly in, but care must be taken not to injure the crowns or roots in any way. A good sprinkling of salt may be added to the manure with advantage, especially on light, dry soils.

Seakale.—New plantations of Seakale may be made from the largest side-roots cut into lengths of 6 or 8 inches. These sets are usually prepared at various times during the winter, and laid in on a border out-of-doors until required for planting. If this has not been done, prepare the sets at once by cutting the top end of the root straight across with a sharp knife, the bottom being cut at an angle, so that no mis-



FIG. 39.—TONGUE OR WHIP GRAFTING.

take as to the position of the root be made when planting. A deep, rich, cool soil is the best for this vegetable, and the sets should be inserted with the tops just below the surface, at a distance of 1 foot or 15 inches from each other, and in rows 2 feet apart. When growth has commenced, examine them carefully, and reduce the number of shoots to one or two on each crown. If it is intended to plant in permanent beds for forcing on the ground, the sets should be planted in clumps or bunches of three, in a radial space of 8 or 9 inches, that they may be conveniently covered with the pots in use, and 2 feet each way between the groups is a suitable distance. The variety known as Lilywhite is much superior to the old purple variety in appearance and quality, though not quite so hardy, as it requires a slight covering of litter or Ferns over the crowns during severe weather.

The Main Crop of Onions.—If there be favourable weather, and the ground is in good working condition, there is no better time than the end of February or early in March for sowing Onions for the main crop. An open, sunny site should be chosen and, if possible, one which has been well manured and deeply worked previously. Pig-dung or other such rank manure, should never be used for this crop, or it will almost certainly cause an attack of the Onion fly. The ground utilised last year for Celery is very suitable, and no fresh manure is needed; but it should have been roughly dug, and well exposed to the winter frost. Take advantage of a dry day to fork the ground over thoroughly, and when it can be walked on without

sticking to the feet, tread it firmly all over. Apply a good dressing of fresh soil before drawing the drills, which should be a foot apart and 1½ inch deep; sow the seed thinly, cover with fine soil, and rake over the surface neatly. A good selection of James's Keaping, Reading Improved, Banbury, Veitch's Main Crop, and the Wroxton are reliable and good Onions.

THE FLOWER GARDEN.

By CHARLES HERRIN, Gardener, Dropprog, Maidenhead.

Hollyhocks.—Owing to a disease affecting the plants for many years past, this hardy and showy perennial has fallen out of general cultivation. The usual method of propagation by cuttings of the young growths, slipped off with a heel, is now not much practised, plants raised in this manner seeming to be more susceptible to attack than seedlings. The best method of ensuring a good display is to treat the plant as an annual or biennial, and if the seeds are obtained from a trustworthy source, a good percentage of double-flowered spikes may be secured. If treated as a biennial, the seeds should be sown in the month of August, and the plants wintered in a frame, secured from frost. Equally good results may, however, be obtained from seeds sown in early spring, if the plants are properly attended to from the first. Sow the seeds thinly broadcast in pans or boxes filled with a soil consisting of equal parts of loam, leaf-soil, and a small quantity of sand, and merely cover the seed with finely-sifted soil. After affording the soil a moderate amount of water, place in a mild hot-bed frame having a top-heat of 60° to 65°, and covering the pans, &c., with thick brown paper till the seedlings appear. As soon as large enough to handle prick off into other boxes, or pot singly into small 60's, returning them to the hot-bed, which should be so made up that the plants come near to the glass; shade from bright sunshine for a few days. When well rooted place them in a cold frame, and keep close for a time, and then admit air, cautiously affording more and more as the season advances. Plants which make good progress may be shifted into 4½-inch pots, and by the middle or end of the month of May they will be fit for planting out in the beds or borders. The stations for Hollyhocks must be heavily manured and trenched, or if in a bed, the whole of it should be so treated. In dry weather a mulch of half-decayed dung and plenty of water should be afforded. With this kind of treatment the Hollyhock flowers the first year.

Marvel of Peru.—This is a half-hardy perennial, growing to about 2 feet in height, and is a useful plant for dotting about in herbaceous borders. The tuberous roots are stored like those of the Dahlia, and may forthwith be potted and stood in a greenhouse or garden-frame, excluding frost and encouraging a slow sturdy growth. Several varieties, with brilliant colours, may be obtained from a packet of seeds, or assorted colours may be purchased, if that is preferred. If seeds be sown at this season and the seed-pots placed in heat, good plants may be raised in readiness for planting out as soon as all danger from late frosts is past. The pots may be filled with a light kind of loam, and the seedlings potted singly as soon as they are large enough to handle. Old roots are the best for forcing large clumps.

Delphiniums.—The propagation of named varieties of Delphinium is easily effected at this season by slipping off the roots with a heel, now starting from the base of old stools, which, when potted into small pots, filled with sandy loam and leaf-soil, and stood in a cold frame, soon form roots. They may be planted in the borders in April. This is the best method to increase named varieties, and the young plants produce fine flower-spikes the first season. It is a more satisfactory method than dividing the old stools and replanting them at once in the border. Seeds may also be sown, and of the single and double-flowered varieties the treatment afforded being similar to that advised for raising Hollyhocks.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower, Burford, Fording.

Anacochilus.—The present is a suitable time to divide and rearrange specimen plants of *Anacochilus Dawsonianus*, *A. petola*, *A. rollisonii*, *A. Lowi*, *A. striatus*, *A. Roxburghii*, *A. setaceus*, &c. Exceptional care must be taken not to injure the roots, for if the point is damaged the plant will cease to grow, and will produce lateral rootlets, as many of the Orchids do. It will be found that the rhizomes become too long to be again planted in pots of convenient size, therefore cut the rhizome in two, and leave several roots attached to the leading growths. Each of the pieces should then be put separately into

the smallest pots convenient, and plunged as closely together as they will stand in shallow pans filled with growing sphagnum-moss. The rooting material should consist of finely chopped sphagnum-moss, a liberal quantity of coarse silver-sand, and some small, clean crocks. Place the plants in a shady part of the stove or glass Indian-house, and put an ordinary bell-glass with a hole at the top over them. This hole should be stopped with a cork, and until the plants have become re-established it should be kept close during the greater part of the time. When young leaves and roots commence to show, the bell-glass may be tilted a little, and the cork removed during the day-time, but at night the glass should be quite closed. Take the glass off each morning, and wipe the interior thoroughly dry. Keep the plants moderately moist at the root whilst growing, and shade them carefully from strong sunshine, but otherwise admit as much light as is possible.

Massevalius.—In the intermediate-house, plants of the Chimera section of *Massevalius*, as *M. chimera*, *M. bella*, *M. Nycterina*, *M. Rozellii*, *M. Winniana*, *M. Wallisi*, *M. Backhouseana*, *M. Houtteana*, *M. Gardneri*, *M. radiana*, *M. Chesteriana*, *M. acutata*, and *M. erythrochaeta* are now commencing growth; it is, therefore, an excellent time to divide old plants, or to give more root room to any that require it. All of the varieties enumerated should be grown in open Teak-wood baskets, and as their flowers grow in a downward direction, no crocks should be used for drainage; only a moderate quantity of peat and sphagnum-moss is needed for them to root in. For the next two or three months these species may be suspended in a well-shaded position in this house. After repotting the plants it is not good practice to give them a thorough watering; an occasional sprinkling, in sufficient quantity to keep the compost moist, is preferable. Take down the plants on bright mornings and well syringe the under-sides of the leaves with tepid soft water. The pure white *M. tovarensis* is also starting to grow, and it is a good time to repot them. Pots or pans may be used, and should be filled to within an inch of the rim with drainage material, covering it lightly with a layer of sphagnum-moss. This species will root freely in equal parts of sphagnum-moss and peat, which should be kept moist only until the young leaves are well advanced. The leaves of this *Massevalia* should be sponged over occasionally, as they are often attacked by small yellow thrips. Unlike most other Orchids, the old peduncles, if allowed to remain on the plant, will bloom for two or three consecutive years; but the retention of these spikes is not advisable, as in time the energies of the plant become weakened. The coolest part of the intermediate-house suits the plant at the present time.

PLANTS UNDER GLASS.

By G. H. MAYCOCK, Gardener, Luton Ho, Luton.

Chrysanthemums.—As soon as it is seen that the roots are showing through at the sides of the ball, re-potting should be undertaken. The pots made use of should be either new or well washed, and the re-potting done firmly. Replace the plants in the cold-house or span-frame, affording no heat unless it be to exclude frost, and afford less air than previously for a period of one week, which will be about the time required to re-establish them afterwards gradually increase the amount. An ordinary cold-frame will answer well enough if it be stood on a bed of coal-ashes, and covering is at hand in case of need. A frame has its advantages, in that in mild weather the lights can be drawn off, but in bad weather the plants are apt to suffer from dampness, and for choice then a greenhouse is the best place. The aim of the gardener should be to secure sturdy and continuous growth, and for this reason crowding the plants must be always avoided. Fumigate the plants now and then, doing it when the leaves are dry.

Achimenes.—A batch of tubers may now be started, and to prolong the flowering season of the plant, batches may be put in at fortnightly intervals. They may be placed in the flowering-pots at first, the latter being extra well drained, and a compost used consisting of one-half sandy-peat, one of leaf-mould not too much decayed, and a small quantity of dried cow-dung rubbed through a small-meshed sieve. Place the tubers evenly over the surface of a 7 or 6-inch pot or deep pan, and cover them over with a 1-inch layer of the soil. To start the tubers, a temperature of 60° by night, and 65° by day, is necessary. The soil should be lightly sprinkled till the plants commence to show flower, when wetting the leaves should cease altogether.

Hippeastrum (Amaryllis).—The whole of the flowering-bulbs will now need to be repotted. The larger ones should have all the soil shaken from the roots, and be repotted singly in 6 or 7-inch pots, according to size of bulb, using as a potting-mixture rich fibrous loam four parts, dried cow-dung one part, and peat one part. Afford the newly-potted bulbs a thorough watering, and after allowing the water to drain away, plunge the pots to the rims in a bed of cocoa-nut fibre refuse, or some other plunging material, over a mild hot-bed of tan or hot-water pipes. Very little water will be needed before growth is advanced. A temperature of 50° by night, with a rise of 10° to 12° by day, will suit them for the first month after repotting. When the flower-spikes begin to push (which should be a little in advance of the leaves), the temperature may be raised to suit the season the flowers are wanted for. Maintain a nice growing atmosphere in the house, syringing the foliage in favourable weather, and shutting up the house early in the afternoon.

Eucharis.—Plants that are just passing out of flower require copious root-waterings, and if the pots are very full of roots, and the plants have not been potted for several years, they will be much benefited by weak manure water given twice a week. Clear root-water may be given them at any time—it is always helpful; and if the plants are syringed with it occasionally they will be the better for it. The *Eucharis* does not require the high temperature some growers are apt to give it. No bottom-heat is given the plants here, nor do we use artificial manures. The stock has not been re-potted for over six years, and the plants give three lots of bloom each year. They are never dried off but they are rested. At present a temperature of 55° to 60° by night will suit healthy specimens passing out of flower. Syringe them well early in the afternoon. Afford a little air on all favourable occasions, and shut up with plenty of sun-heat when possible.

Bulbs.—Examine all bulbs that are still in ashes or other such material, and do not allow them to remain there too long.

FRUITS UNDER GLASS.

By F. HARRIS, Gardener, Eastnor Castle, Leicestershire.

Tomatoes.—The earliest plants being now sufficiently large to be placed in their fruiting-pots, should be potted before becoming root-bound, as to let them get into this state is to seriously check their growth. This also will result from placing them in a lower degree of warmth without first inuring them to it; and by the application of water at a low temperature. It is very essential that the pots and soil should be warmed before proceeding to repot. When the flowers begin to expand and the plants are established, more air will be necessary for securing a good set. During flowering the plants should be kept somewhat on the dry side till a good set is obtained, afterwards more warmth may be applied; also top-dressings of decayed manure and soil, affording warm liquid-manure freely. At Eastnor the early crops are obtained from plants grown in rough troughs about 14 inches wide and deep, the plants being placed at the bottom of these troughs, with enough soil to just cover the balls, which allows plenty of space for top-dressings. They stand at about 16 inches apart, and are run up as single stems at first, then a shoot which comes out at the base of the plant is run up, so as to give a succession of fruits. This method of cultivation is less troublesome than if pots were used, and is a saving in many directions. Later batches of plants should be repotted as occasion demands, keeping them sturdy. Seed may be sown forthwith for late fruiting under glass and outdoor culture, sowing thinly and potting off the seedlings as soon as they can be readily handled.

Cherries and Plums.—The earlier-started trees, now that they are in flower, should have free ventilation night and day in favourable weather, and be gently tapped to distribute the pollen. The soil in the pots must be kept moderately moist at this season, as any failure to do this will be sure to cause the fall of the bloom. After this date all portable trees should be in their places. Those planted in the beds and borders should be examined as to the state of the soil, and where this is found to be dryish, it should receive a thorough application of water. The glass and woodwork of the house should be cleansed, and borders cleared of rubbish and top-dressed. On sunny days the trees should be wetted with the syringe, no artificial heat being applied in the early stage unless it be required on frosty nights when the trees are in bloom, or in dull or rainy weather. If

the house be unheated, it should be kept cool and the trees at rest till the latest period possible. In any case afford the trees one good fumigation before the flower-buds burst.

Early Pot-Vines.—The Grapes on November-started Vines will now be stoning, and ought not to be much pushed along, for although seemingly at a standstill whilst the seed is in course of formation, growth will soon become more apparent. Be careful in affording water at the root, never allowing the soil to become dry, as one mistake of this sort would be very injurious. Stop the lateral shoots to a moderate degree, and keep growth somewhat thin. When the berries re-commence to swell, the temperature may be increased by degrees from 65° to 70° at night, with a commensurate rise of 10° by day. Close the house or pits early in the afternoon, damping the paths, walls, &c., at that time. When the colour is noticed in the berries, let the house be kept rather cooler, and although it be closed as early, a small quantity of air should be admitted about 6 P.M. If this practice be adhered to, the colour and finish of black Grapes especially will be much improved.

Late Vines.—The Vines should be started about the first day of March, the fruit requiring a longer season to arrive at perfection than if they had been vinerias started earlier in the year. The ripening should be finished by the end of the month of September. The temperature at the start should not exceed 50° by night and 60° by day. Afford the border inside the vinery a good application of water at a warmth of 85°; syringe the Vines twice daily in sunny, and once only in dull or showery weather.

THE APIARY.

By EXPERT.

The Brood-chamber.—It is yet too early to make an examination of the combs by breaking up the brood-nest, though some who have passed the novice stage in their career as bee-keepers have done so, and unwisely have made the fact known. I say unwisely, because what such bee-keepers do, the novice thinks he may attempt—but the practised hand knows what the novice has to learn, first, that the less the brood-chamber is interfered with the better at all times, but particularly when the low temperature prevailing around is likely to chill the brood; and secondly, how to do such a delicate operation in what would of necessity be double quick time to avoid the consequences of a chill, or my own part, I like to advise what I do myself, and at present I shall leave the brood-chamber severely alone. But though the combs ought not yet to be pulled apart for the necessary spring examination of combs, brood, and queen, the larider must be replenished if the food-supply runs short. Economy of heat is a great desideratum in the early months of the year, and so I would advise the removal of the outer combs not covered with bees, their places being taken by dummies. At the same time, whether stores are short or not, a two or three-pound cake of soft candy may with advantage be placed upon the frames. Over all these place as much covering in the shape of woollen wraps as the loft will hold, and then, as soon as the weather will permit of the overhauling of stocks, a crowded brood chamber and extensive patches of brood will prove the wisdom of present attention. When breeding operations commence, there will be innumerable bits of comb and other debris falling to the floor-board, which, however, should not be allowed to accumulate. I have seen stocks many a time with such accumulations on the floor-board nearly an inch in depth. How much nicer and how much better for the health and prosperity of the community would it have been if, as soon as a spell of fine mild weather came, the floor-boards were carefully removed, scraped, and dried. There are many stocks in which the combs have been built every way but the right way, thus making movable combs a misnomer; and now is the time to set about remedying the defect without wholly upsetting the colony. The bees will be confined at present to the centre combs, therefore I advise the outer two or three combs, more or less, being cut apart quickly so as to leave the bees crowded by dummies upon just as many of the crooked combs as they can well cover. New combs or frames of wired foundation may then be added as required, being careful to gradually push the few irregular combs now left to the back or side. The queen will in due course leave them for the nice new combs at the side, and then, if it is thought desirable and time will permit, the bad combs may be replaced with fresh ones as soon as the brood hatches.

EDITORIAL NOTICES.

ADVERTISEMENTS should be sent to the PUBLISHER.

Letters for Publication, as well as specimens and plants for naming, should be addressed to the EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be written on ONE SIDE ONLY OF THE PAPER, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith. The Editor does not undertake to pay for any contributions, or to return unused communications or illustrations, unless by special arrangement.

Local News.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

Illustrations.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, &c.; but he cannot be responsible for loss or injury.

Newspapers.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

APPOINTMENTS FOR MARCH.

WEDNESDAY,	MAR. 5	{ Devon and Exeter Gardeners Association Meeting.
THURSDAY,	MAR. 4	{ Linnean Society Meeting. Ayrshire Gardeners Meeting.
SATURDAY,	MAR. 6	{ Soc. Franc. d'Hort., London. Isle of Wight Hort. Imp. Soc.
TUESDAY,	MAR. 9	—Royal Hort. Soc. Coms.
WEDNESDAY,	MAR. 10	—Renfrewshire Gardeners Society.
SATURDAY,	MAR. 13	—Royal Botanic Society Meeting.
WEDNESDAY,	MAR. 17	{ Devon and Exeter Gardeners' Soc. Spring Show.
THURSDAY,	MAR. 18	{ Linnean Society Meeting. Soc. d'Hort. de l'Estabon Botanic Gdns., Birmingham (two days).
TUESDAY,	MAR. 23	—Royal Hort. Soc. Coms.
SATURDAY,	MAR. 27	—Royal Botanic Soc. Meet.
TUESDAY,	MAR. 30	—Truro Daffodil Show (two days).
WEDNESDAY,	MAR. 31	—Royal Bot. Soc., Spring Show.

SALES.

		{ Roses, Herbaceous Plants, Lilies, &c., at Protheroe & Morris' Rooms.
MONDAY,	MAR. 1	{ 1000 lots of Border Plants, Roses, Climbers, Ornamental Shrubs and Trees, Lilies, Hardy Bulbs, &c., at Stevens' Rooms.
TUESDAY,	MAR. 2	{ Hardy Perennials, Cannas, Gladioli, &c., at Protheroe & Morris' Rooms.
		{ Japanese Lilies, Azaleas, Gladioli, Palms, &c., at Protheroe & Morris' Rooms.
WEDNESDAY,	MAR. 3	{ 3000 English, German, French, and Dutch Roses, Ornamental Shrubs, from Holland, English and Foreign Fruit Trees, Palms, Border Plants, &c., at Stevens' Rooms.
THURSDAY,	MAR. 4	{ Herbaceous and Hardy Plants and Bulbs, Carnations, &c., at Protheroe & Morris' Rooms.
		{ Trade Sale of Lilliums, Bulbs, Roots, &c., at Stevens' Rooms.
FRIDAY,	MAR. 5	{ Imported and Established Orchids, at Protheroe & Morris' Rooms.

AVERAGE TEMPERATURE for the ensuing week, deduced from Observations of Forty-three years, at Chiswick.—40° 8'.

ACTUAL TEMPERATURES—
LONDON.—February 24: Max., 51°; Min., 47°.
PROTHEROE.—February 24 (6 P.M.): Max., 52°, Valencia Min., 44°, Orkney.

The Royal Gardeners' Orphan Fund. In another column we give a full statement of the doings at the annual meeting of this most useful institution. It was established ten years ago to mark the Jubilee of our Queen, and to fill up a vacancy in our charitable institutions. Its inception was due to gardeners, its

foundation was completed by gardeners, it has hitherto been maintained mainly by the exertions of gardeners, its benefits are extended exclusively to the orphans of gardeners. Need more be said to recommend it to the continued assistance of the gardeners of all degree. We are told that works of mercy and charity commend themselves most to our Queen as the means of commemorating the completion of the sixtieth year of her reign. This is exactly in accordance with what we know of Her Majesty's feelings. To strengthen and extend the Gardeners' Orphan Fund, established in 1887 in commemoration of the friendly meal which followed the work of her Jubilee is surely as fit a thing as we can do, and we do not think we can urge that duty more forcibly than by quoting the words of Her Majesty's gardener, Mr. OWEN THOMAS, on the occasion the anniversary meeting:—

"It seems but yesterday that we were celebrating the Jubilee year of Her Majesty's accession to the throne. It was on this occasion when gardeners, like other loyal members of the community, were looking out for a means to give expression to their loyalty, that it occurred to Mr. PENNY, then of Sandringham, and Mr. CLAYTON, of Grimston Park, that the best mode this expression could take would be the institution of a Fund to befriended the orphans of gardeners. I cannot but think that both these gentlemen will always look back with feelings of thankfulness for the inspiration that came to them to suggest the institution of this Fund. At first the idea was met by much misgiving by many as being too great an undertaking to be successfully launched; however, there were a few bold spirits in those days, and the project was no sooner ventilated by the gardening Press than it was taken up by acclamation, not only by horticulturists, but also by the garden-loving public, and the proud position the Fund occupies to-day proves beyond doubt that a happier or a better suggestion could not have been made. So much for the inception of the Fund. What then shall be said of its growth? The excellent report in the hands of members will tell them much better than I can. But I may be allowed to say this—that nearly £5000 has been paid to destitute orphans of gardeners during the past nine years, besides which a sum of £9000 has been invested for their future benefit. This is a record to be proud of, and the management may be congratulated. This great success has been brought about, in the first place by virtue of the merit of the charity—gardeners' orphans.

"The English people love their gardens, and they have opened their hearts and their pockets wide to help the objects of this charity. We know that our bappy and favoured country is full of benevolent and kindly feeling towards the weak and the destitute. But it is not everyone who has the power or the faculty of being able to bring this good quality into active existence. The orphan fund is fortunate in having those at its head who take an active, personal, and practical interest in its welfare. When it is said that at the head of the charity we have H.R.H. the Princess of WALES, with His Grace the Duke of BEDFORD, as President; our esteemed friend, Mr. MARSHALL, as Chairman of the executive committee; with our old friend, Mr. BARRON, as Secretary; besides a working committee of gentlemen, everyone of whom is a well-known horticulturist; the success which has attended the establishment of this Fund is not to be wondered at.

"We must not forget that the establishment of this Institution has imposed a serious responsibility on those who are responsible for its management and maintenance. To-day there have been added thirteen orphans to share the benefits of the Fund, at an extra annual expenditure to the charity of £170. A better commemoration of Her Majesty's long reign no Institution could possibly make, but in view of this greater responsibility a greater income must be forthcoming, or the Fund will be in the

same position as the orphans are now it—namely, "with no provision." If you will look down the list of orphan candidates for election, you will find the melancholy words, "no provision," "no provision," repeated over and over again. To me those words express a feeling of utter despair and desolation, as represented in the case of the widow and destitute orphan. It means to them not only an empty chair, but an empty cupboard, an empty grate, and often worse than all—an empty heart. The object of this charity is to help to ease the widow's burden, and to brighten the path of the orphan child. The wealthy lovers of gardens and gardening, as well as members of the horticultural trade, have come out nobly to help the garden charities—both this one and the older charity—in the welfare of which most of us are also deeply interested. But it is with regret, and I say deep regret, that the fact must be stated that gardeners generally have not rallied round and identified themselves with the welfare of the garden charities as they ought to have done. I don't know why. It is not from the want of kindly thoughts and feelings, I am quite sure, and I don't think it can be from the want of 5s. a year. Let each one of those who have not subscribed answer for himself this eventful year, in the best of all ways, by sending in his subscription to Mr. BARRON. What we want is, that both the garden charities should become in reality national garden charities. They should embrace the name of every gardener worthy of the name throughout the land, so that these who do not support the charity may be the exception and not the rule, as at present. We must gratefully acknowledge the valuable and increased help given by our earnest and kind gardening friends in the provinces, and on their continued valuable help must largely depend the future welfare of this charity. But the greatest source of our strength as regards the future, must, I think, lie with the rising generation of young gardeners. To make it easier for them to join the institution, may I suggest, if your rules will permit of its being done, that you reduce the subscription of young gardeners to 2s. 6d. a year (nimble shillings are potent in charity), and if this can be done, I would ask every gardener who has the interest of the charity at heart to bring the subject before his young men, when I am sure a liberal response would be the result. This would open an easy door of entrance to the young, and once you secure his interest and sympathy, you may depend upon it that in the great majority of instances, he will prove a steadfast friend and supporter of the Fund, and at the same time become a better gardener.

"It cannot be too well known that this is a purely benevolent institution, and that no question is asked as to the nationality of the applicant for its help, or as to what religion their parents may have preferred, neither are the orphans barred from the benefits of the fund if their fathers in their lifetime have been so neglectful as to fail to support the institution. At the same time, I cannot help saying that I would not give much for that man's love or care for his wife and children who refuses to do what he can whilst in health for an institution on the funds of which those who are near and dear to him may be compelled to throw themselves through death and misfortune."

FLOWERS AT KENSAL GREEN CEMETERY.

Those who know this large burial-place in the west of London may also have some idea of the difficulties that attend plant-culture there, owing principally to the presence of several very large gasometers. The fumes that occasionally escape from these have a very serious effect upon tender plants, and sometimes cause the leaves to drop in great quantity. We have pleasure, therefore, in presenting a view of a group of plants that was to be seen in one of the houses at the end of last summer (fig. 40), as the *Dracenas*, *Celosias*, and other species exhibit successful cultivation, more than equal to what one would expect. Mr. T. BROWN has had charge of the cemetery for about two years, and during that time has effected considerable improvement



FIG. 10.—A GROUP OF MISCELLANEOUS PLANTS GROWN IN THE SUMMER OF 1896 IN A GREENHOUSE AT KENSAL GREEN GALLERY.
(SEE P. 140.)



in its appearance, many of the paths having been re-made, and two new plant-houses erected last year. There is a total area of nearly 100 acres, and consequently several miles of drives and paths to maintain in condition. For garden purposes there is retained a staff of twenty men, and during the summer the cemetery presents a neat and pretty appearance. It has a nice central avenue of Lime trees.

LINNEAN SOCIETY.—An evening meeting will be held on Thursday, March 4, at 8 P.M., when the following papers will be read:—1, "On a Trichoparia Parasitic on *Pellia epiphylla*, Cordis," by Mr. W. G. P. ELLIS; 2, "New Species of Perichæta from New Britain, &c.," by Dr. W. B. BENHAM.

BRUSSELS ORCHIDÉENNE.—At a meeting of the Brussels Orchidéenne, held on Sunday, February 14, MM. LUCIEN LINDEN & Co. exhibited a fine selection of Orchids. Specially noteworthy were two *Odontoglossum*, which were commended by the jury; *O. crispum* var. *Kegeljani*, a fine type of "Pacho," with well-rounded flowers, the ground faintly tinged with straw colour, and spotted all over with bright brownish-red; *O. c.* var. *mirabile* has flowers of a citron-yellow hue, enlivened by effective white lines; it forms a distinct and valued variety. There were also a dozen varieties of *Cattleya Trianoi*, *di prima cartello*, viz., the wonderful *C. Trianei* var. *Imperator*, not shown for competition; as well as the exceedingly beautiful *C. T.* excellens, *C. T.* princeps, *C. T.* majestica, *C. T.* Ragotiana, and others not yet named. M. RAGOT DE MEAUX showed a variety of *Odontoglossum Wilkeanum*, much spotted with clear chocolate-brown; M. PAUWELS sent an excellent *O. crispum*, three fine varieties of *Cattleya Trianoi*, *Oncidium splendendum*, very well flowered; and *Cypripedium* Mrs. Canham. M. MITEAU exhibited a pretty *Cypripedium* exul, and a strong, well-flowered plant of his beautiful *C. Panli* var. *superbum*. M. COPPENS had a series of fine varieties of *Cattleya Trianoi* and *Odontoglossum crispum*, with nicely-rounded flowers, possessing a few small spots. M. DE LOMBAERDE showed a dark variety of *Lælia anceps*, Dr. CAPART a good variety of *Cattleya Trianoi*, the lip developed and well coloured, and a well-bloomed *Dendrobium glaucum*. The Royal Gardens at Laeken were represented by a delicate variety of *C. Trianoi*, with small but nicely-coloured blooms; M. LE CHEVALIER DE WARIGNY sent several remarkable varieties of *C. Trianoi*; M. LINDEN showed a fine group, including fine specimens of *C. Trianoi*, and *Odontoglossum Wilkeanum* and *luteo-purpureum*, nicely marked; and *Cypripedium Lebaudyanum*, which had been before shown, was again admired. The jury made the following awards:—First-class Diplomas of Honour (for new Orchids) for *Odontoglossum crispum* var. *Kegeljani* (par acclamation), and *O. c.* var. *mirabile*, à l'unanimité, both from MM. LUCIEN LINDEN & Co. First-class Certificates of Merit (for fine varieties) were awarded for—*Odontoglossum Wilkeanum* var. *leopardinum*; to M. LINDEN, à l'unanimité, for *Cattleya Trianoi* var. excellens; to MM. LUCIEN LINDEN & Co. (à l'unanimité); for *C. Trianoi* vars. (two) to M. COPPENS, both à l'unanimité; for *C. Trianoi* var. princeps, to MM. LINDEN & Co., à l'unanimité; to M. MITEAU, for *Cypripedium Panli* var. *superbum*; to M. COPPENS, for *Cattleya Trianoi* var.; to Dr. CAPART, for *C. T.* var.; to MM. LUCIEN LINDEN & Co., for *C. T.* var. majestica; to M. LINDEN, MM. LUCIEN LINDEN & Co., and M. LE CHEVALIER DE WARIGNY, each for *C. T.* var.; to M. DE LOMBAERDE, for *Lælia anceps* var. *Léda*; to M. LINDEN, for *Odontoglossum Wilkeanum*; to M. MITEAU, for *O. crispum*; to M. LINDEN, for *C. minus*; to M. COPPENS, for *C. O. crispum* var.; and to M. LINDEN for *Saccolabium guttatum* var. album. Second-class Certificates of Merit were awarded for the *Cattleya Trianoi* of M. COPPENS, M. PAUWELS, and (a third) again to M. COPPENS; and to M. LINDEN, for *Odontoglossum luteo-purpureum*. Certificates for flowering were allotted for *Dendrobium glaucum*, from Dr. CAPART; and *Oncidium splendendum*, from M. PAUWELS. Messrs. HUGH LOW, of London, showed at this meet-

ing their new crested *Cyclamen*, Bnah Hill Pioneer, which has white flowers, and is very beautiful; the jury awarded it a First-class Diploma of Honour (it was not for competition) à l'unanimité.

CACTACEÆ.—Dr. KARL SCHUMANN, of the Royal Botanic Museum, in Berlin, is about to bring out an illustrated monograph of the Cactaceæ, with cultural notes by M. KARL HIRSCH. The work will be published in ten parts, at 2 marks (shillings) each. The publisher is Mr. J. NEUMANN, of Neudamm, but the work can be procured through Messrs. WILLIAMS & NORGATE, Henrietta Street.

MR. DAVID THOMSON.—Some of Mr. THOMSON'S old pupils have availed themselves of his retirement, as affording them a fitting opportunity of manifesting their appreciation of his services to horticulture, and of their gratitude for his interest in their welfare. Mr. A. HENDERSON, Thoresby Park Gardens, near Ollerton, Notts, has the motor in hand, and to him all communications should be addressed.

DEVON AND EXETER GARDENERS' ASSOCIATION.—On the occasion of the meeting of the above, at the Guildhall, Mr. W. SWAN, of Bystock, in the chair on Wednesday, February 17, Mr. T. BROCKBANK, late Orchid foreman at Mentmore, Buckinghamshire, gave a lecture on "Orchids and their Cultivation." He began by reviewing the erroneous methods of cultivation pursued by the early cultivators of Orchids in this country, pointing out that many of their mistakes arose from ignorance of the climatal conditions under which Orchids existed in their native habitats. He then contrasted the present successful methods of culture with what were formerly held, and primitive Orchid-houses with modern ones, and gave reasons why roomy houses are to be preferred to small, close, ill-lighted ones, in which Orchids, as well as other species of plants, used to be grown. Ventilation, temperature, water, coupôts, &c., were then successively dealt with; also, the use of manures, and the employment of Jadoo-fibre in Orchid culture.

THE HAMBURG EXHIBITION.—The prospects of the approaching International Horticultural Exhibition at Hamburg are highly satisfactory. The scientific and other sections are assured of success, and valuable prizes are offered. Congress will be held during the course of the exhibition; in August many gardeners are expected to muster, to discuss professional interests, and study the various exhibits. Entries for the spring show should be made (addressed to the Organising Committee) before the end of March.

The amount of interest shown by foreigners in the exhibition is exceeding all expectations, and quite recently the exhibition authorities have been the recipients of an official communication from the Government of South Australia expressing a desire to take part in the exhibition. The Cape of Good Hope authorities have telegraphed for a programme and full particulars, so as to be in a position to afford information to intending exhibitors from that colony. Mexico has taken similar steps, and a wonderful collection of *Cacti* is to be sent from that country. California is sending a Commissioner and several assistants. Its exhibit includes three large railway waggons, such as are employed in the conveyance of fruit.

"THE CANADIAN HORTICULTURIST" appears this month in a new and much improved guise. Though fruit culture is still a principal feature, other departments of horticulture now receive more attention than formerly, and at least, together with the improvements in paper and type, that horticulture is attracting more general interest than heretofore. The journal is printed and published at Grimsby, Ontario.

TADCASTER PAXTON SOCIETY.—On February 18, Mr. W. CALLUM, B.A., read a paper on the "Flora of Bygone Ages." His first reviewed the history of the earth from its incandescent condition,

through its successive stages of igneous and sedimentary rock-formations; and the flora of the carboniferous period was dealt with in detail. A rich collection of fossils was afterwards inspected.

MANNA FROM GRASS.—At a meeting of the Royal Society of New South Wales, in December last, Messrs. BAKER and SMITH announced the discovery of a substance like manna on the nodes of a grass, *Andropogon anuulatus*. The excretion occurs in masses of the size of a marble.

SWEET PEAS UP TO DATE.—Messrs. W. ALLEE BURFEE & Co., of Philadelphia, have published a little pamphlet under this title. From the interesting statements and historical data it includes, it is something more than a trade catalogue. The author of the brochure is the Rev. W. T. HUTCHINS, who gives details as to culture, and a descriptive catalogue of 165 varieties, mostly raised by Messrs. BURFEE & Co., or by our renowned champion H. ECKFORD, to whose efforts it is that the present fancy for these sweet flowers has attained such large proportions. It is to be hoped that the florists will not be too severe in their code of properties; already there is a tendency to flatten petals, remove notches, and render the flower formal. The flower is naturally irregular, and to make it anything else may be curious, as showing what may be done; but it is a mistaken taste, and wipes away all the history and meaning of the flower.

ANTON JELINEK.—We glean from the *Wiener Gärtnerei Zeitung* for February 15, tidings of the death on January 6, the present year, of ANTON JELINEK, a celebrated Bohemian gardener, and the creator of the fairy-like, imperial gardens of Mirauar and Lacourat; and later established as a nurseryman in Döbling, near the Austrian capital. He was chosen by the Imperial and Royal Academy of Sciences for his botanical acquirements, to accompany the *Novara* frigate in her three years' voyage round the world. For his services on this expedition he was decorated by the Emperor FRANZ JOSEPH with the good service order of the Golden Cross with the Crown, on the recommendation of Dr. EDUARD FENZL, the then Director of the University Gardens of Vienna.

ENGLISH ORCHARDS.—A lecture, entitled "The Orchards of England," will be delivered by Mr. GEORGE GORDON before the Society of Arts, Adam Street, Adelphi, on Wednesday, March 3. The chair will be taken, at 8 P.M., by Mr. W. T. THIBELTON DYER, F.R.S., C.M.G., &c., Director of the Royal Gardens, Kew.

GARDENERS' SOCIETIES AND THE CHARITIES.—We are pleased to hear through Mr. J. LYNE, gardener at Foxbury, Chislehurst, that at a concert held on the 18th inst., under the auspices of the Chislehurst Gardeners' Mutual Improvement Association, a sum of £20 or more was obtained for the Gardeners' Orphan Fund.

PUBLICATIONS RECEIVED.—*Guide to Vegetable Culture*, by W. DRUMMOND & SONS, Stirling, N.B., and 153, Dawson Street, Dublin. A small manual, useful to cottagers and allottees.

PLANT PORTRAITS.

- ESCHERPHALAZIUM VILLOSUM*, *Revue Horticole*, January 13.
HEPESASTRUM MESSAGIANUM, L. Lindl., Native of Brazil, flowers rose-coloured. *Illustration Horticole*, t. 72.
LILIUM PHILIPPENSE, *Garden*, Dec. 19.
LILIUM WALLACEI, *Garden*, January 30.
 PEAR, PIERRE TOURNAI, *Bulletin d'Agriculture*, &c., January.
 PENNETHON RUPPELLI, ornamental grass, from Abyssinia, *Revue Horticole*, pp. 54, 55.
 POSTEROMERIA CORDATA, *Melchior's Monthly*, January.
 RICHBARIA ELLOTTIANA, *Revue de l'Agriculture Belge*, January.
 ROSE, FRANÇOIS COPPEE, H.P., flower small, British hybrid, dark crimson. *Moniteur d'Horticulture*, Jan. 10.
 REDBEDIA FLOIDA, *Melchior's Monthly*, Dec. ubor.
 RECLIA MAKOVIANA, *Revue Horticole*, Dec. 16.
 TEA ROSE, MADAME CHARLES, *Garden*, January 16.

BOOK NOTICE.

A MANUAL AND DICTIONARY OF THE FLOWERING PLANTS AND FERNS. By J. C. Willis, M.A. Two volumes. (London: C. J. Clay & Sons.)

The following extract from the preface will show the author's object:—

"The aim with which I commenced, nearly seven years ago, to prepare this book, was to supply within a reasonable compass, a summary of useful and scientific information about the plants met with in a botanical garden or museum, or in the field. The student, when placed before the bewildering variety of forms in such a collection as that at Kew, does not know where to begin or what to do to acquire information about the plants. The available works of general reference are mostly very bulky and often out of date, and as a rule refer only to systematic or economic botany, and say nothing about morphology or natural history. I have endeavoured to bring together in this book as much information as is required by any but specialists, upon all plants usually met with, and upon all those points—morphology, classification, natural history, economic botany, &c.—which do not require the use of a microscope. . . . The principal part of the book consists of a dictionary, in which the whole of the families and the important genera of flowering plants and Ferns are dealt with. The families are treated very fully, more so than in any ordinary text-book of systematic botany, whereas the genera are treated much more briefly unless they show some feature of special interest that is not common to the family."

We place this extract from the preface in the forefront of our notice, in order to do no injustice to the author, and also because we experience some difficulty in reviewing his production. It is clearly a compilation, and yet its most valuable features are to be found in its originality and novelty of treatment. It is intended, presumably, for the novice, but there is much in it that is only adapted for the advanced student. Again, the two halves of the book, or rather, we should say, the two volumes, seem to be wanting in cohesion. The first and smaller portion is an extremely condensed handbook of general, up-to-date, morphology; the second volume is a *catalogue raisonné* of orders and genera. Altogether, the amount of information crowded into these 600 or more small pages is quite wonderful, and attests not only the assiduity but the accuracy of the compiler. In the beginning the author gives an account of the purposes and general arrangements of botanic gardens, and shows how they may be turned to account by the student. This, strange to say, is a distinctly novel feature in a text-book. After this comes a chapter which will be a hard one for a beginner. It is devoted to the "outlines of general morphology, &c.," and the "probable evolutionary history of the plant," the author adding prudently that we can only speculate with more or less degree of probability upon the course of events, but strangely omitting, or making scant mention of evidence afforded by the embryonic and developmental characters, and by the phenomena of reversion which are so important in this connection. In any case, he leads off with antheridia and spermatozooids, oogonia and ova, zygotes, gametes, sporophytes, sporogonia, and other terms which we need not quote, without any attempt at description, and with very little explanation. It is as if a pupil, who had not previously mastered the letters of the alphabet, were set to read sentences and paragraphs, and even chapters. Some very considerable previous knowledge of plant conformation is requisite before the pupil can profit by this very condensed account of morphology in its physiological aspect. It is, for instance, confusing to be told that the sporophyte was "at first undifferentiated and reproductive only." How then did it live?

In dealing with the subject of variation, it is pointed out (as is, indeed, frequently done), that "rudimentary structures are variable." That is a statement, however, which needs some qualification,

for in some groups, at any rate, the systematic botanist looks out for these rudimentary structures to afford him "characters," and places the more stress upon them, for the very reason that they are not acted on by the environment, and are in consequence more constant.

Classification and its principles are clearly treated, and then follows a chapter on geographical distribution as dependent on the environment. Too much stress, however, must not be put on these influences. It is not infrequent in Switzerland to find xerophytes living for a time as aquatics. *Sempervivum arachnoideum*, a characteristic "xerophyte," may often be found growing in fissures filled with water.

The fourth chapter is devoted to Economic Botany, a subject dismissed in little more than half a dozen pages. This restricted treatment is, however, compensated for by the information given in the second volume. This second volume is a miniature *Treasury of Botany* brought down to date. For advanced students and experts these little volumes will be most useful for references, as accuracy of statement and general freedom from accidental errors are as remarkable in them as are the comprehensiveness and condensation of treatment.

THE ROSARY.

PRUNING ROSES.

So much has been written upon this important part of Rose-culture, that it is difficult to discover any fresh point of view from which to treat the subject; nor can it be done by briefly pointing out methods of pruning for certain classes, seeing that all but the *Polyanthas*, Scotch, Ayrshires, and Provence, possess varieties, varying as regards habit and strength, or weakness of growth, that no one rule can possibly be given which will meet all cases. What contrasts there are between Margaret Dickson and Etienne Levet, Lady Mary Fitzwilliam and Reine Marie Henriette, Cleopatra and Rêve d'Or, Souvenir de la Malmaison and Mrs. Paul, Blanche Moreau and White Bath, Favier and Mrs. Bosanquet, as examples of their respective classes!

How often in the past, and I fear even with the present day advance in horticultural literature, have we seen yards of valuable growth cut away from our most beautiful climbers! Why should we allow such growth to be made, if only to be cut away at pruning-time? There are not many of our climbing Roses cultivated with the sole object of securing a few blooms of extra quality. They are more generally grown for the artistic beauty of their masses of flower, covering the walls of a house, fence, or arbour, and to get the best results we must leave as much as possible of the new growth intact. With these it is more a question of thinning than of pruning, and we can only remove wood that has got aged and is getting flowerless in consequence. To remove the swaying growths of the previous summer is simply to sacrifice that which would afford the finest show of blossom. Make room for these by thinning, and do not draw them in too closely. These remarks apply more particularly to such rambling varieties as *Félicité-Perpétue*, *Ruga*, the *Banksian*, *Rêve d'Or*, *Reine Marie Henriette*, and *Longworth Rambler*.

The same practice holds good with other extra vigorous growers not used as climbers but as pillar Roses, and for pegging down to the soil, viz., *Paul Neyron*, *Gloire des Rosomanes*, *Boule de Neige* and *Châtedolle* are splendid pillar Roses, but if the best of the previous season's wood is cut away, the plants are nearly flowerless compared with what might have been the case had the older wood been thinned out, and last year's left almost intact. The 10-foot rods of *Margaret Dickson*, as well as the long upright growths of *Ulrich Brunner*, *Gabrielle Luizet*, *Gloire Lyonnaise*, and others, are by far their most valuable growths. Yet I often see these varieties pruned—nay, not pruned, mutilated—upon the same lines as *A. K.* *Williams*, *Marie Baumann*, and varieties with similar habit. What is the result of this? We find a small number of flowers on the plant, and its energies

directed to the production of other lengthy growths similar to those which the pruner has removed. This is the sole reason that so many of our grandest Roses with vigorous habit are condemned as shy bloomers, when the fault really lay with the pruner. By securing the long rods in a horizontal position we get flower throughout their whole length, and at the same time make better space for the development of more such growth coming away from the base of the plant. The long rods which flowered last summer should be cut away in the early autumn, and the young growths secured to stakes, pegging them down again the following spring.

There should be little need of many words asent the pruning of such grand old favourites as *General Jacquemont*, *Alfred Colomb*, and varieties of like habit; but even here we need bear in mind that the weaker the shoot of last season, the harder it needs pruning. *La France*, *Marie Van Houtte*, *Anna Olivier*, *Mrs. Bosanquet*, and *Caroline Testout*, are fair representatives of vigorous growers with bushy habit, and the leads should first be well thinned in the centre, then pruned upon the same basis as the *General Jacquemont* class, but a little more severely. The very weak and erratic Roses like *Comtesse de Nadillac*, *Souvenir d'Elise Vardon*, *Cleopatra*, and *Princess of Wales*, should be pruned with great care. In their cases, I would simply remove pithy and indifferent wood, and slightly shorten back the remainder. I have found these to break stronger from a small eye, so long as well ripened, than from many apparently far more promising eyes, and every piece of healthy growth is valuable here.

I will close with a remark upon *R. rugosa* and hybrid Sweet Briars. If you wish to see the full beauty of these, they must not be pruned, but allowed to grow at will. Nor should they be planted in any position where considerable room cannot be afforded. That old favourite, the *Cabbage*, or *Provence* Rose, needs much closer pruning than might be inferred from its growth. The above is for lovers of Roses, not exhibitors, who pruned with that object alone. *A. Piper*.

LILIUM COLUMBIANUM.

This grows over a wide range of country and in many situations. It is found in Oregon from the coast line and the mouth of the Columbia River, throughout the Coast Range, and in the lower portions of the Cascade Mountains. It reaches north-eastern California in *Mo-loe* County, and in the State of Washington is found in the southern part in about the same range as in Oregon. I have no accurate information as to how far it extends on Puget Sound, but it follows the Columbia River valley, and is found in various portions of North-eastern Oregon, and is close to the Idaho line, to my knowledge. It prefers a sandy, well-drained soil, among Ferns, in open woods. It is easily grown in cultivation. *L. columbianum* may be described as a miniature *L. Humboldtii*. The flower has reflexed orange-red segments, finely dotted. The stem is slender, and both it and the leaves are light green. The bulb is compact and ovoid, as in *L. Humboldtii*, but, unlike the latter, the scales are thin. Five hundred average bulbs measure as follows:—100, 4 to 5½ inches in circumference, three-quarters of an ounce each; 340, 3 to 3½ inches in circumference, one-third of an ounce; 54, 2½ inches in circumference, one-fifth of an ounce. *L. columbianum* grows from 1½ to 4 feet in height, and usually flowers the first year. I find sandy alluvium best answers its needs.

The bulbs of *Lilium Bolanderi* are almost identical with those of *L. columbianum*. I have not flowered *L. Bolanderi*, nor have I seen it in flower. It is described as being from 6 inches to 3 feet high, and few-flowered. The leaves are whorled, and the general habit seems to be similar to that of *L. columbianum*; the flowers are, however, quite different, the segments are not reflexed, and the flower would seem to be broadly trumpet or bell-shaped and nodding. A collector who saw it in full flower this year describes it as a very handsome flower of a

pleasing red, and growing in a high mountainous region in a soil of rocky debris and leaf-mould. Habitat indefinite, Humboldt and Del Norte Counties in North-western California.

In this group will fall a fourth species of the far north, related to *Lilium columbianum*, and as yet unnamed. In this species the habit of *L. columbianum* in bulb and leaf is combined with a peculiar-shaped flower. The lower half of the segments forms a closely-constricted tube, from which the upper portion spreads horizontally in a rotate flower, finely dotted with maroon. This species is nearly as fragrant as *L. Parryi*, *Carl Parry*, Ukiah, Calif., in "*Garden and Forest*."

A GERMINATING APPARATUS.

Those who have at any time been engaged in cultivating Ferns from spores, know by experience how great a number of cultures perish. Germs and spores of animals and plants, of insects, worms

parts, which can be opened independently of each other, if for some reason or other should make it necessary to open the lower part only.

The pots, covered with round glass plates, are placed in zinc tubs filled with sand and water. These zinc tubs are arranged on small wooden trestles, under which are found the heating-tubes, that may consist of ordinary water-pipes.

These tubes are provided with taps (1, 2, 3 and 4), by means of which, in case the temperature should become too high, the action of some of the heating-tubes can be suspended.

In one of these tubes there is a tap, indicated by a small circle, which enables us to allow the air present in the water to escape. The direction in which the water flows is indicated by arrows.

The water is heated in a copper, w, in which there is a thermometer contained in a tube to prevent the quicksilver, in case the thermometer should burst, from getting into the water, and the water from escaping from the tubes.

spores, it can be protected against all sorts of damaging influences. As said before the hothouses of the Botanical Gardens are mostly very favourable to the development of lower organisms, and formerly I could keep the cultures clean only with unremitting vigilance and the utmost care, and they were sure to be destroyed if I were prevented from watching over them personally. In the germinating apparatus, on the contrary, whatever is sown comes forth and thrives; and, as regards keeping clean, hardly require any care at all, provided the spores have been carefully selected, and previous to sowing the spores, the peat and the pots have been carefully boiled, so as to be freed from all possible animal and vegetable germs and spores. *Utrecht*.

NURSERY NOTES.

MESSRS. F. SANDER & CO., ST. ALBANS.

THE plant-houses here always present a fresh and bright appearance, and a constant changing display of flowers which the large and varied stock necessarily assures. The interesting character of the groups observed in the rockwork terminations to the houses, and about the pools of water with which many of them are furnished, has been increased of late years by the presence of new or rare foliage plants, which, it may be remarked, have for some time past taken an almost equal place in the St. Albans houses with the Orchids. Where Orchids and foliage plants are arranged together, pretty effects are produced. In several of these rockery displays the new *Dracena Godsefiana*, with its elegant sprays of bright green leaves, spotted with yellow, and which at this season are also furnished with heads of white fragrant flowers, is a conspicuous feature. It seems the best of plants for growing with and among Orchids, for table decoration, or as cut sprays. Indeed, there seems to be few purposes to which it cannot be put. In one of these arrangements a handsome lot of *Cattleya Trianoi*, among which were a fine form, superior to *C. T. Backhouseana*, and several very good *C. T. alba*, together with good plants of the white *Cymbidium eburneum*, some *C. giganteum*, *C. Lowianum*, &c., form the floral part. The display of *Cattleya Trianoi* also extending down one side of the house, while on the other side the first flower of *C. Gaskelliana*, which follows *C. Trianoi*, was open.

In another group, the white and green-leaved *Dracena Sanderiana*, now a favourite decorative variety, was the principal foliage-plant, and overhead hung a fine lot of *Nepenthes*, the prettiest of which was *N. Sanderiana*, with pitchers as large as those of *N. Rafflesiana*, the wings and lid beautifully tinted and veined with bright rose colour.

Passing along the lofty range which forms the connection with the ends of the various houses that run at right angles with it, we found a good show of *Dendrobium crassinode*, *D. Wardianum*, varieties of *D. nobile*, and other *Dendrobies*, with here and there groups of *Cologyne cristata*, and of the variable forms of *Cypripedium insigne montanum*, which has been so prolific in good things. Glancing at the groups in the houses passed, in one arranged around two gigantic plants of *Arachnante (Vanda) Lowii*, were some specimens of the white-flowered *Cymbidium Mastorsii*, some fine forms of *Cattleya Trianoi*, and many showy spikes of *Oncidium splendendum*, *Laelia tenebrosa*, *Laelia purpurata* in sheath, *L. crispata*, and other Brazilian Orchids occupying the house beyond.

In another house the flower-spikes of the new hybrid *Eucharis × Elmstiana*, and *E. × Stevensii* were appearing profusely above the leaves; and associated with them good examples of white and coloured *Laelia* accops in flower. Another group consisted of plants of *Lycaste Skinneri*, among which were several fine examples of the large or best form of *L. S. alba*, also *Vanda Kimballiana*, *V. Amesiana*, *Laelia harpophylla*, *L. cinnabarina*, *Platyelmis glaucacea*, some species of *Cattleyas*, and many *Sobralias*, some of which had the buds prominent.

Among an interesting batch of botanical Orchids

FIG. 1.

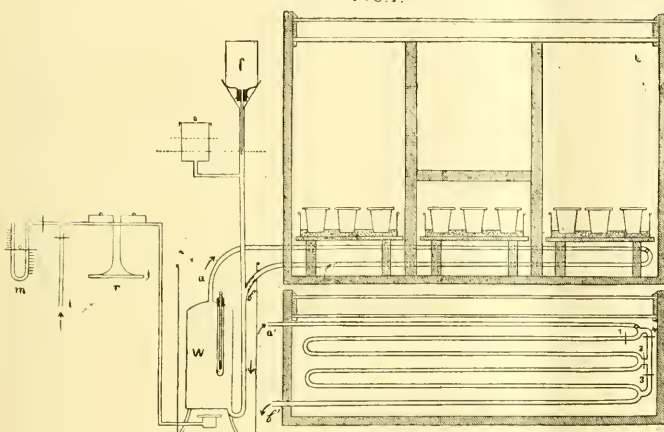


FIG. 41.—GERMINATING APPARATUS.

Fig. 1.—*f*, admission of the gas; *m*, manometer; *p*, pressure-regulator; *l*, burner; *w*, heating-copper; *o*, place where the hot water is admitted, vertical section; *b*, place where the hot-water escapes, vertical section; *o*, reservoir for the overflowing water; *f*, flask of Mariotte.

Fig. 2.—*a'* and *b'*, the same places in horizontal section, as *a* and *b*, in vertical; 1, 2, 3, and 4, taps; when we work with six pipes, 1 and 2 are open, 3 and 4 closed; in order to work with four pipes and suspend the operation of the second and third pipes, 1 is closed, and 4 opened; in order to work with two pipes and suspend the operation of the second, third, fourth, and fifth pipes, 1 and 2 are closed, 3 and 4 opened. The circle in the first pipe indicates the tap, through which the air present in the water can escape. The copper gas-pipes used for the apparatus should be screwed together to prevent danger of a fire.

algae, fungi, and musci, often spring up in great numbers, killing in a very short time the healthiest cultures.

As the hot-houses of the Botanical Gardens, where such experiments are made, mostly offer the most favourable conditions for the development of lower organisms, the cultures are always in danger, unless they can be closely and regularly watched. To avoid these dangers, I have caused a germinating apparatus to be constructed, as shown above (fig. 41). The illustration is at about one-fiftieth of the real size. At first it did not work with the accuracy which might reasonably be expected, but after some experiments, the apparatus assumed the form represented by the illustration, and since that time it has been a great success.

The germinating-apparatus is, if possible, placed in the window-frame of the study, one looking north. The top and the side turned to the street are provided with double panes; the side facing the study has three glass-doors, of which the middle one consists of two

The water is heated by a gas-burner, *h*. The copper is contained in a zinc box, and is connected by means of a vertical tube with the reservoir, *o*, which is covered with a lid to keep the dust out, and prevent evaporation. When in this tube the water falls to the lowest level, water is admitted into it from the flask of Mariotte, *f*.

The gas is supplied through the pipe, *g*; on the left is a manometer, *m*, to measure the gas-pressure; on the right side is seen a pressure-regulator, a double governor, *r*. At first I used a Bunsen mercury-regulator; but since by accident it burst, causing the gas flame to go out, I have made use of the double governor.

The supply of gas, as required by the temperature of the surroundings, and, of course, be regulated by means of the tap, *t*, admitting the gas.

A great advantage of the germinating apparatus is that it is placed in a room directly under the experimentalist's personal observance; and that, when used exclusively for germinating experiments with Fern-

were noted in flower the rare *Oncidium Brunescens*, *Miltonia Endressii*, *Prescottia plantaginea*, *Leptotes nana*, *Epidendrum polybulbon*, *O. tridactylum*, *Eulophia virens*, *Cataseum discolor*, *Cymbidium Devonianum*, *Cypripedium Schomburgkianum*, *Trichopilia sanguinolenta*, some singular *Agavecum* of small growth from Madagascar; *Pleuronthallis stelis*, *Masdevallia*, &c.

In the cool-houses, the display consisted of a number of varieties of the true *Odontoglossum nuxium*, *O. Andersonianum*, some very fine *O. luteopurpureum*, of which one form of the *hystrix* section was the most beautiful and very large flower; *O. Rossi majus*, *O. Harryanum*, *O. Pescatorei*, *O. crispum*, *O. triumphans*, *O. Edwardii*, some good *O. Halli*, both the yellow and the white-lipped forms; the rare *O. nevadense*, *O. Sanderianum*, *O. Hunne-wellianum*, and some remarkable hybrids. Also of the cool-house *Oncidium*s, *O. superbius*, *O. cucullatum*, *O. serratum*, *O. Lucasianum*, &c. In the houses containing hybrid *Orchids*, a good show was made of varieties of *Dendrobium* × *Ainsworthii* D. × *Dulce*, *D. Caspoe*, D. × *Owenianum*, the rarer varieties of *D. nobilis*, such as *D. n. Bullianum*, *D. n. Sanderianum*, *D. n. nobiliss*, &c.

In another house plants of *Phaius tuberculatus*, and a batch of *P. × Martini*, and a plant of the new yellow *P. × Ashworthianus*; some *Pescatoreas* and *Bolles*, and scarlet *Anthuriums* were observed in flower.

One side of a warm-house was occupied by a large importation of *Phalanopsis Stuartiana* and other species, some of them being in flower; and in the houses devoted to *Cypripedium*s a good display was made of hybrids and species, among which *C. Chamberlainianum* and the allied *C. Victoria Marie*, many varieties of *C. villosum* and *C. insigne*, a large number of the handsome *C. × Calypso*, *C. × Lathamianum*, and many other hybrids, were noted. Other important batches observed consisted of *Vanda cœrulea*, the pretty *Stenoglossis longifolia*, from Natal; and the free-flowering, violet-coloured *Utricularia Forgetiana*; and some good pieces of *Epidendrum Wallisii*, a number of plants of the pretty white-flowering *Deutzia Lemoinei*, plants of *Reanthera Inscouthiana*, well recovered from their journey; and some of the fragrant *Agavecum Chailluanum* in flower. Among *Begonias*, the pretty *B. Gloire de Lorraine* seems to be perpetually in flower.

HOME CORRESPONDENCE.

THE RAINY DAY! (GARDENERS' ROYAL BENEVOLENT INSTITUTION).—Dr. Watts told us all about the "busy bee," and Franklin ("Old Moore") long ago advised our "making hay while the sun shines," as a provision against "a rainy day;" and I should like to add my own convictions respecting the necessity that now exists for, at least, all well-to-do gardeners to subscribe to the Gardeners' Royal Benevolent Institution. If there is any one marked feature in our moral or ethical progress during the past sixty years, it certainly consists, in a great measure, in the growth and development of altruism, or selflessness. In some cases, indeed, it may, and has been thought, that the upper classes have been legally nudged in favour of the working masses; but even if we confine ourselves to "voluntary contributions" we shall find that benevolence and unselfishness are, so to speak, "in the air." Say or do what we will, life's noblest goal is self-denial and self-sacrifice. In no way does this appeal to most of us so strongly as in the case of our oldest gardening charity, and the practical interest in it may be best shown by all gardeners giving at least something to its aid, either in pecuniary contributions, or by acting as voluntary agents in recommending the Society to others, perhaps better able to contribute than they are themselves. In the special case of the Gardeners' Royal Benevolent Institution we have a society founded in 1838, and of which Her Majesty the Queen is patroness. The Society was established with the laudable object of relieving, by means of pensions and otherwise, aged and infirm gardeners, market gardeners, market growers, nurserymen, seedsmen, their widows, and others engaged in horticultural pursuits, and its work has been well done. The pensions were

originally £16 per annum to men, and £12 per annum to their widows, but the amounts were increased in 1885 to £20 and £16 respectively. During the time it has been in existence the Institution has distributed in pensions and gratuities £71,000. It inculcates the principle of "self-help," by giving a preference to those candidates for assistance who have contributed to its funds. Persons of sixty years of age and upwards, if incapacitated from work, and if they comply with the rules, or younger in case of total disability, are eligible for pensions. One hundred and sixty-one persons are now receiving permanent aid, whilst there are twenty-nine pressing cases on the list awaiting election. Additional funds are therefore much needed to meet some of these urgent claims. An annual subscriber has one vote for each guinea. A donation, or collection, of ten guineas constitutes life-membership, with one vote at each election. A life-subscriber has one vote for life for ten guineas, and an additional vote for life for every additional ten guineas. A large proportion of the total funds of the Society has been derived from the voluntary contributions of those amateurs who employ gardeners, and nurserymen, and others have in many cases given most liberally to its funds. The Society is ably and economically conducted on the soundest and best business principles, and what is now most needed is the help and personal interest of a larger number of practical gardeners. It is, indeed, depressing to find how small a proportion of those for whose benefit it is worked really contribute to its funds, or take any hearty interest in it whatever. No other institution or society known to me guarantees a pension for life after sixty years of age for total incapacity to any gardener who makes a single payment of ten guineas, or who subscribes fifteen guineas in fifteen annual payments. Scarcely how generous the patrons of gardening have been, and still are, it now behoves all self-respecting gardeners to put a hand to the wheel, and to do at least something themselves for such an excellent institution. Much can be done either by contributions direct, or by their saying a word in due season to their employers and friends. Now and then private gardens, with particular specialties, may be opened to the public at a nominal entrance fee, and the proceeds given to the fund; or gardeners may often be able to organise local entertainments to the same end. One of my friends is most generous in sharing surplus plants, seeds, and cuttings with visitors, but only on the condition that they give at least something to his collecting-box shaped like a watering-can, while others use the collecting-cards whenever opportunity occurs. Another kind friend, who is hospitably inclined and fond of cards, plays penny points with his guests on the sole condition that all moneys so used shall go into the collecting box for his favourite charity. As a matter of fact, however, "whenever there's a will there's a way," and even the poorest gardener with a family may do something, however little, towards an institution that never fails its supporters. As a proof of the kind thought and consideration of those at the head of the Institution, we may draw attention to "the Victorian Era Fund" recently inaugurated to give a sum of money to all who are unfortunate and unsuccessful at the annual election of pensioners. The idea is a noble one, viz., that even the disappointed shall be soothed, and that "none shall be sent empty away." A sum of £5000 is urgently required as a principal fund and others to do their bit to give or collect this sum. Are there not 5000 gardeners in England to-day able to give £1 each towards this end? I feel sure there are, if only they would interest themselves and their friends in the matter. Horticultural Societies, and Gardeners' Mutual Improvement Societies, might do much by the use of collecting-boxes and cards at their flower shows or meetings. Not only head-gardeners, but foremen, and young gardeners, especially those for whom lodgings and other advantages are provided, might do something, however small, for, as our Scotch friends say, "many a mickle mak's a muckle." If a gardener with twenty men a penny per week from each would yield £4 6s. 8d. a year, and if this were paid into the Post Office Savings Bank every week the money would be safe, and increased slightly by interest to boot; while the whole transaction would afford an object-lesson on thrift and business principles to all the young men concerned. In some cases gardeners who have subscribed £10 to £20, have been elected as annuitants, and have received ten or twenty-five per cent. of the principal they had originally invested; and I believe there is no instance of a subscriber not having been elected after due application has been made.

Unfortunately, it is not possible for every gardener to subscribe largely, but there are few who could not afford, say, 5*d.* a week, so as to make up a guinea a year. It is a trifle like this—put by carefully at stated intervals that will provide a sure and certain hope for a decrepit old age. As an old subscriber of £15 15s. once said to me, "The wife or myself is sure of something at least if we fail, and that thought alone is a great consolation, and worth the money we invested many times over." He, good honest man, has never earned more than a pound a week, with his cottage and garden, and he has had a family of five to start in life; but all are doing well, and at nearly seventy years of age he is hale and hearty, and respected by his employers; and although he is eligible in some ways, I never expect to see him an annuitant of our good old institution. *F. W. Burbidge.*

THE CLASSIFICATION OF APPLES.—In inviting the Council of the Royal Horticultural Society to undertake the task of formulating authorised lists of Apples which shall be termed respectively cooking and dessert, and so regarded throughout the kingdom, the requisitionists do not seem to have fully realised the exceeding difficulty of the undertaking. No such classification could be complete that did not include every Apple in existence, many of which, as the celebrated Chiswick Congress shows, are some 1500; but it would still be needful to classify all unknown local Apples—evidently an impossibility. But even attempting the work partially, dealing solely with such varieties as are commonly listed, it would be found that were a dozen of the leading fruit catalogues of the kingdom examined, that some 400 assumed diverse varieties were published. What would still further tend to difficulty in the matter, is the undoubted fact that traders differ so largely amongst themselves as to the proper classification of varieties that confusion is excessive. No doubt, it will be pleaded that were some fitting authority to classify these varieties, traders would follow that lead. If they did so, it would indicate great humbleness on their parts, as it would be tacit admission that through all the years past they had been in the wrong. Yet there can be no doubt but that so long as the arbitrary distinctions of cooking and dessert, or table and kitchen sections, are to be maintained, the more probable is acceptance of any classification, however partial. It is worthy of note that the present bother (and we may say agitation) has grown out of the action of the York Gals Committee in inserting into the conditions for a miscellaneous collection of fruit, the arbitrary term "dessert." A mixed or miscellaneous collection of fruit is invariably inclusive of several kinds, and often of diverse varieties. It also invariably comprises fruit that is ripe, or nearly so. The Royal Horticultural Society, in its Crystal Palace schedule, is content to ask for ripe fruit, which, seeing that these fruits are for table use, seems to meet every requirement. The National Chrysanthemum Society, at their Jubilee show, were equally exacting, getting all that was possible by asking for a collection of nine dishes of fruit, thus using no arbitrary term. Had not the term dessert, which is a foolish one to employ, been in the York schedule, Mr. Riddell would never have been disqualified, and the subsequent bother would not have occurred. However, the Royal Horticultural Society has no desire to shirk the task sought to be imposed upon it, but preferred to proceed in its own way, which is this: "We cannot undertake to formulate lists of Apples classified to suit every one; but as we hold the greatest Apple show in the kingdom at the Crystal Palace, and have classes for Apples in sections, we will, through the agency of a small committee of experts, arrange lists for our own show schedule of what shall be by that body properly regarded as eating, cooking, or compound sections, which, so far as the Crystal Palace show is concerned, will be regarded as authoritative, and we leave to the country at large to accept our classification or leave it. These are not their words, but they describe practically what has been attempted. The committee seems to favour the term "eating" to the other one, "dessert," but allow "cooking" to remain. Lists of about seventy of the best known and most commonly grown and shown varieties of eating and of cooking Apples have been compiled, and from these will be either starred or withdrawn and put into a third list certain few varieties which cannot be rigidly classified as either absolutely, but may be well regarded as compound or suitable for both uses. But even these have first been put into the sections to which they seem primarily to belong. Of course when these lists are completed, they will be published in the

Crystal Palace Fruit Show Schedule, and these will not further infest with some anti-biervative under the Royal Horticultural Society. There can be no doubt that classification is a matter of exceeding difficulty, for a variety that may be only fit to cook in one part of the kingdom is delicious eating in another. Then tastes vary very much, and whilst some will have high flavour, only such as Cox's or Ribston's give, others prefer the soft flesh of Pomona or of Blenheim Orange Pippin; whilst others even have fondness for the keen acidity of Golden Noble, or Wellington, and certainly the latter four do furnish for the table most beautiful samples. All have particular goodness for softness of flesh, without acidity, and but little sugar. Youth often has preference for sharpness, whilst others prefer sugarness. Then there are numerous small and rather hard varieties included in the eating section, that have fancy names, but are really worthless either to grow or to eat. Many very fine handsome rich-coloured, soft-fleshed, and exceedingly pleasant Apples, on the other hand, are classed amongst cookers, because they are large. It is difficult to correct all this apparent misapprehension, but no doubt what the Royal Horticultural Society is doing will greatly help to that end. *Pomona*.

TO CLEAR MEALY-BUG FROM GRAPE-VINES.—The Vines at the place where I am now gardener were greatly infested with mealy bug when I entered on my service three years ago last November, none of the bunches of Grapes being fit to eat unless they were washed in clear water, which, of course, spoiled their appearance. When the crop was cleared off, the Vines were then scraped almost bare of bark, pruned, and the surface-soil of the border taken away to a depth of several inches, and the Vines washed with water containing 2 oz. of soft-soap to the gallon, and used as hot as one could bear the hand in it. This being done, the Vines were dressed with a mixture consisting of 1 lb. soft-soap, 1 lb. of flowers-of-sulphur, about 3 lb. of clay, a handful of soot to the gallon of water, which made a kind of paint, to which I added half-pint of gas-tar to every ten and a half pints of the mixture, well mixing all together. This paint was used on the canes from below the ground-level to the top, filling up all crannies with it, but not much was used about the buds. I watched the Vines closely for any appearance of bug, and only discovered a few, which I touched with a camel's-hair pencil dipped into a mixture of one-quarter pint of water, two tea-spoonfuls of paraffin, and a piece of soft-soap of the size of a cob-nut, the soap and paraffin being first mixed, and the water added gradually. The mixture should be well stirred when it is used, and should be kept in a corked bottle in the vinery. Since carrying out the above sort of treatment, there are now but few bugs on the Vines. *D. J. H.*

NAILING PEACH TREES.—I have been interested in the notes appearing under the above heading, and would like to put in a plea, viz., for a nailed Peach tree, much as I am in favour of wire. All the same, a good nailer will finish a tree nearly as quickly as another can tie one, and when it is finished the nailed tree will look better than the tied one. The following is a few of the advantages of nailing. First, if the tree is not matted how closely the wires are placed, there will always be some cross supports required to which to secure the ends of the shoots that will not touch the wires, and this causes the workman to have recourse to matting, string, or sticks, which take time to arrange. Whereas with the nails you can do exactly what is required without loss of time; and with shreds, by using these long or short, pressure that often results in gumming is averted. I have an idea that gumming is from one cause and another more prevalent in tied than in nailed trees. Peach trees should be untied or unnailed every year, and unless this is done one cannot have well-developed trees in good condition for any length of time; as all trees grown upon the principle (extension) have necessarily to be rearranged every year. I think it may be taken for granted that there are in the country quite as many trees that are nailed as are tied to wires; in fact, in many of the best gardens wire is not used. I have noticed that better and finer crops of fruit come from nailed trees, and considering all things, I think I intend to stick to nails for trees on outside walls. I have not found that fruit trees suffer in any way from being close to the wall, and never failed to secure good crops, 1895 and 1896 being exceptions, owing to the heavy frost. I have taken forty

dozen fruits from one five-year-old tree. The following varieties are growing here on the south wall, and these without exception do well: Waterloo, Amsten June, Early Grasse Mignonne, Dymond, Barrington, Goshawk, Royal George, Sea Eagle, with Lord Napier and Victoria Nectarines, and sundry seedling Peaches and Nectarines. The secret of successful Peach culture does not consist in the way a tree is fastened to the wall, but in affording trees a good start in suitable soil, proper drainage, keeping them free from insect pests of all kinds, and severe disbudding so that the crowding of shoots is avoided. The border must be well supplied with water, and the syringe or engine used freely in warm bright weather. The Peaches and Nectarines whose names I have given afford fruits from the end of June to the end of October, after which date Peaches are no longer fit for dessert. *W. N. Cook, Compton Bassett, Calne Wilts.*

SEED PODS ON POINSETTIA PULCHERRIMA.—Here we have two plants which have produced seed-pods on them, the only two out of a batch of 150 plants. It is not a rare occurrence where a large batch of plants are grown. I had one or two seeds some three years ago, and grew the seedlings, but there does not appear to be any difference in them when in bract than those grown from cuttings, they only grow taller and are paler in colour. I have enclosed a bract with a seed-pod upon it, for your correspondent. *A. S. Cole.*

— In reply to "X," in a recent issue, it may be stated that this plant produces seed very freely if fertilised. The seeds vegetate readily when quite matured, if sown in heat. I was successful in raising plants from seeds six years ago, but they resembled the parent, although I crossed them with *Euphorbia macquiniiflora*. *Wm. Snygler, Basing Park Gardens, Alton.*

THE VICTORIAN ERA FUND.—Mr. Harris, in the *Gardeners' Chronicle*, p. 129, writing on the above subject, suggests that gardeners, foremen, journeymen, &c., should subscribe a fixed sum this year towards the Gardeners' Benevolent Institution, &c.; also that gardeners should be asked to collect from men employed under them. Although the sum he mentions is small, I do not consider that gardeners should ask the men to subscribe; their pay is usually so small that they can ill afford even so small a sum as he mentions. But I would like to suggest that every head-gardener should be induced to become an annual subscriber; and if such a rule were followed throughout the kingdom, we should not then require any collection or extra funds. *A Life Member and Annual Subscriber.*

THE CEDARS OF LEBANON.—In an interesting article from the pen of J. Pascoe Oliver, Capt. Royal Artillery, which appeared in the issues of the *Gardeners' Chronicle* for August 9 and 16, 1879, an account of journeyings in Palestine, the Northern Lebanon range, and El Ika'a is given. The article was illustrated by a sketch by Captain Oliver of the Lebanon Cedars as they then existed. The trees, large and small, numbered 285 specimens, the smallest being from 50 to 80 years old. No young trees were springing up, although there were cones in abundance, and germinating seeds were observed far beyond the actual area covered by the trees. If it were not for the goats which eat off the seedlings, and the visitors who tread them under foot, a few decades would see a large extension of the area under Cedars, and eventually the formation of a large wood. Perhaps some reader of this note may be able to inform me if anything has been done since 1879 to carry out the idea of protecting this grove, which is the property of the Patriarch of the Maronites, who, at that time, resided by the Dog River, not far from Beyrout. Some articles have appeared in the *Gardeners' Chronicle* recently which would seem to indicate that the Cedar of Lebanon shows seminal variation. Perhaps persons who have closely observed these trees in their native habitat would be enabled to say if this inference has any foundation in fact. *A Traveller.*

CYPRIPEDIUM INSIGNE SANDERÆ.—I am pleased to have now got your correspondent, "S. S." to facts (see *Gardeners' Chronicle*, p. 128). This plant shown at Manchester does not any portion of the Pickering Lodge plant. I see he states that Mr. Ball has got very much mixed; but I should like to have his opinion of his judgment when

he states the flower shown at Manchester is not the true *C. i.* Sanderæ, and much inferior to Mr. Ball's flower, when I inform him that it came straight from Baron Schroder's. *Fred. Hardy.*

VIOLET PRINCESS OF WALES.—Having seen some remarks in the gardening press attributing ephyness in flowering to this new Violet, I would like to say that such has not been our experience. It has given us good flowers and foliage all the winter. Growing side by side with most other varieties, it has proved superior to all of them, including *The California*. It is, moreover, remarkably free from damping during the winter months. Enclosed is a bunch of blooms for your inspection. *G. Morphet, Hulsewood Gardens, Dartford Heath.* [Very fine flowers indeed. Ed.]

SOCIETIES.

ROYAL GARDENERS' ORPHAN FUND. The Annual Meeting.

FEBRUARY 19.—On the above date was held the annual general meeting of those interested in the Royal Gardeners' Orphan Fund. The meeting took place at 4 P.M., at Anderson's Hotel, Fleet Street, London, E.C., and the poor attendance may be partially explained by the wretched character of the weather during the day. Among the score or so gentlemen present were the following:—Messrs. W. Marshall (Chairman of Executive Committee), B. Wynde, Mr. Dean, J. Hudson, Jas. Walker, F. A. Asshe, A. W. G. Weeks, Jas. Melady, G. W. Gwynn, H. J. Jones, Geo. Reynolds, W. Bonpar, H. Bates, H. Jones, W. Campbell, A. F. Ba no (Secretary), and representatives of the Horticultural Press. After the reading of the minutes of the last meeting, which were approved, it was proposed by Mr. MARSHALL, Chairman, that the report presented by the executive committee be adopted. It ran as follows:—

REPORT AND STATEMENT OF ACCOUNTS FOR THE YEAR ENDING DECEMBER 31, 1896.

In presenting their Ninth Annual Report, the executive committee can heartily congratulate the subscribers on another year's operations—generally satisfactory and encouraging.

If the financial support given to the Fund as annual subscriptions be not as large as the committee could desire, yet from other sources it is evenly maintained and the interest in the progress of the Fund widely felt.

The Fund was instituted in 1857 in commemoration of the Jubilee of Her Majesty the Queen.

The year 1897 finds your committee assisting in commemorating the longest reign of a British Sovereign, and in consideration of this auspicious event, they recommend to the subscribers that the whole of the candidates be elected by resolution of the annual meeting.

To those who have so generously, and in not a few cases so constantly supported the Fund by means of special donations, the committee owe a great debt of gratitude. By sums derived from money-boxes, concerts, the opening to the public inspection of gardens and plant-houses, especially during the season of the Chrysanthemum, the sale of flowers, &c., considerable additions have been made to the Fund.

The Annual Festival Dinner—presided over by His Grace the Duke of Bedford, the president of the Fund, proved a most gratifying success, resulting in a considerable augmentation to the charity; and the committee tender to His Grace their most grateful thanks for his able advocacy of the claims of the institution, and also for his generous contribution. Among other contributions to the Festival Fund was that of the members of the Board of Governors of Covent Garden Market, who subscribed the sum of £341 15s. 6d., a measure of support highly appreciated by the committee; and they also desire to gratefully acknowledge the great assistance rendered by Mr. J. ASSHE in obtaining this welcome gift.

The number of children, who have been placed on the Fund since the commencement is eighty-five; of this number fifty-eight are now receiving the benefits of the Fund, to be increased by those recommended for election this day. The number of children who through the age limit and other causes have ceased to be chargeable to the Fund is twenty-seven.

One most pleasing cause of gratification to the committee is the letters of deep and earnest thankfulness received from the mothers of children who have ceased to be chargeable to the fund, acknowledging the great help the quarterly payments have proved to them in times of necessity.

The committee, by means of the special grants they are empowered to make, have also been enabled to render timely assistance in starting several orphan families.

The total amount paid to the children since the commencement of the Fund is £3,938.

The members of the Executive Committee who retire by rotation according to Rule IV. are, Messrs. MARSHALL, BAILES DEAN, HERBERT, JONES, MAY, REYNOLDS, and WEEKS, all of whom being eligible offered themselves for re-election.

The best thanks of this committee are due, and are hereby tendered to the Treasurer, T. B. HAWSON, Esq., and the Auditor, JOHN FRASER, Esq., who retire after holding office

since the establishment of the Fund. The committee have great pleasure in announcing that N. N. SHERWOOD, Esq. (a magnificent supporter of the Fund), has kindly consented to accept the office of Treasurer, and PETER BARR, Esq., that of Auditor, and they are hereby nominated by the committee.

Mr. A. F. BARON is again nominated as Secretary at the same remuneration.

CASH STATEMENT FOR THE YEAR ENDING DECEMBER 31, 1896.

	£ s. d.
To Balance from last account	600 1 11
„ Subscriptions, General	£221 5 6
„ Ditto collected by local secs.	74 0 0
	965 5 6
„ Donations, general (including proceeds of sales of flowers, boxes, certificates, &c.)	156 1 10
„ Ditto collected by local secs.	53 13 0
	214 15 7
„ The Emma Sherwood Memorial	13 0 0
„ Annual dinner	887 3 6
„ Card collection	28 8 8
„ Advertisements in List of Subscribers	27 14 0
„ Dividends on stock and interest on deposit	225 17 7
	£2362 6 9

NOTES.—INVESTMENTS	
2 1/2 Per Cent. Consols	£7670 6 10
3 Per Cent. Canada Stock	2000 0 0
	£9670 6 10

Expenditure.	
By Allowances to Orphans	£810 5 0
„ Emma Sherwood Memorial	13 0 0
„ Grants in aid	6 0 0
	868 5 0
„ Annual dinner	161 17 8
„ Secretary's salary	105 0 0
„ Printing and posting subscribers' lists	31 8 6
„ Printing and stationery	16 11 4
„ Annual, General, and Committee Meetings	13 2 3
„ Postages	16 10 4
„ Bank charges	1 6 2
„ Sundry expenses (petty cash)	18 9 8
	66 2 9
„ Purchase of £500 Three per Cent Canada Stock	530 1 0
„ Balance—	
„ Cash at bankers	492 4 3
„ Cash in hand	7 7 7
„ Cash on deposit	100 0 0
	599 11 10
	£2362 6 9

Having inspected the securities and examined the books and vouchers supplied to us, we hereby certify the above account to be correct. (Signed) PETER BARR, Mr. Rowan, Clapham } Auditors.

Dated January 23, 1897.

Mr. MARSHALL, in a brief commentary upon the report, drew the attention of the meeting to several letters that had been received from the guardians of children the committee had helped from the Fund, all of which were satisfactory, as showing the extremely useful purpose served by the grants of money, and the appreciation evident on the part of those responsible for the children's welfare. The excellent practice of the Institution in the granting of a sum to assist in giving the children a start in some trade or other was also alluded to. The committee, it will be remembered, have power to grant such allowances (not exceeding £10) to any cases that appear to require such help, and during the past year this step was taken on three occasions. That it is possible to do something in this direction is a matter we think for congratulation.

There was no discussion of the report in detail; and after it had been seconded by Mr. Jno. FRASER, it was passed unanimously.

The next business was that of proposing votes of thanks to retiring officers, and the election of new ones. Mr. T. B. HAYWOOD, who has been treasurer to the Fund since its inception, retires with the thanks of all; and it is satisfactory to know that the office will be taken up so worthily a gentleman as Mr. N. N. SHERWOOD, who was proposed by Mr. R. DEAN, seconded by Mr. J. W. DIXON, and elected with enthusiasm. Mr. Peter Barr was next elected to succeed Mr. Jno. Fraser as auditor of the Fund. Mr. Barr next proposed that the whole of the retiring members of the committee be re-elected, and in doing so, testified in a marked manner to the services these gentlemen had previously rendered the Institution upon the committee. This having been passed, it was proposed by the chairman that Mr. A. F. BARON be re-elected secretary upon the same conditions as last year, and this too was adopted by acclamation.

The CHAIRMAN then rose to propose that, there being thirteen applicants for benefit from the Fund, the whole of them be elected. He said that it was most satisfactory that the Society, which, it would be remembered, was inaugurated in 1887, to celebrate the jubilee of Her Majesty's reign, had disbursed a sum of nearly £5,000 to children, and at the same time had managed to put away another sum

approaching £10,000. The committee thought that under such circumstances (and it being Her Majesty's Diamond Jubilee year) it was warranted in recommending the election of the whole of the committee. This was approved by the meeting, and it was next resolved, upon a proposition by Mr. Asshe, that a copy of the previous resolution be sent to Her Majesty the Queen, and to the Patroness of the Society the Princess of Wales. A hearty vote of thanks to the chairman concluded the meeting.

A friendly dinner of the members of the committee and subscribers to the fund afterwards took place at the same hotel. Mr. Gwen Thomas presiding. (See p. 140)

GHENT HORTICULTURAL

FEBRUARY 7.—The Chambre Syndicale des Horticulteurs Belges held their last monthly meeting on the above date, when the following awards were made:

Certificates of Merit to M. Jules Hye (*par acclamation*) for Cypripedium insigne Sandere Baron Schroeder, and for Laio-Cattleya Pallas (C. Loviana × L. crispata); to M. Ed. Pynaert van Geert, for Pteris Boultoni; to Messrs. Linden & Co. (*à l'unanimité*), for Cattleya Trianae imperator; to M. Jules Hye, for Lycaete Poelmuij (*par rapport*); to the same exhibitor, for *Acrostichum*, for *Acrostichum* alba, and for Odontoglossum Uro-Sikineri; to M. Capitaine, for Clivia M. Capitaine; to M. Jules Hye (*par acclamation et avec félicitations du jury*), for a set of seedling Cypripediums; to M. Capitaine, for Clivia Mlle. Aime Capitaine; to M. Jules Hye, for Dendrobium neoglossum, Velocitassum J. Pynaertianum, Dendrobium nobile, D. nobile nobilior, and for Cymbidium orbicunum giganteum. An award was also made (*par acclamation et avec les félicitations du jury*), to Messrs. Hugh Low & Sons, of London, for Cyclamen "Bush Hill Pioneer."

Certificates for cultivation and blessing were allotted for—Dendrobium luteiflorum, from M. L. De Smet-Duvivier; Cypripedium Chamberlainianum, from M. J. de Cock; Miltoniopsis Bleumae, from M. Jules Hye; Vriesea punctulata, from M. Poelman-Maenhout, and for Dendrobium nobile, from M. Jules Hye.

Certificates of good cultivation were awarded to—M. A. Rigouts (*à l'unanimité*), for Nidularium striatum; M. Em. de Cock, for Aralia elegantissima; M. Ed. Pynaert van Geert, for Cypripedium Lithamianum invarium (villosum × spiciferianum); M. A. Rigouts, for Dieffenbachia Fournieri, Tillandsia forestalis, and T. tessellata; to M. Em. de Cock, for Pezomachus striatifolius; and to M. L. De Smet-Duvivier (*par acclamation*), for Croton Hamburgianum.

M. Em. de Cock received a Botanical Certificate for Corokia Cotonaster.

Honourable mention was accorded to—Kenia Delmoreana, from M. Ed. Pynaert; Vicia maculosa, from M. Poelman-Maenhout; Echinidion Jonghii, 1896, from M. Poelman-Maenhout; Aralia Chabrier from M. Bernard Spa; Calanthe subaequalis, from M. Ed. Pynaert; Tillandsia Lindeni from M. Poelman-Maenhout; and Draecena intermedia (D. camafolia × D. linearis), from M. A. Rigouts.

The jury have to sit at the next meeting Cypripedium Josephine-Johella (Harrisianum × Chantini), shown by M. Ed. Pynaert van Geert.

MANCHESTER ROYAL BOTANIC.

The arrangements for the year 1897 show no lack of energy on the part of the Council, notwithstanding the depressing decrease of public support at the shows of the season.

The first show, which generally consists mostly of Orchids, will take place on March 16 and 17 in the Town Hall. The second and great Whiteside show, which has latterly been eclipsed by the Royal Horticultural Society's display at the Temple, is fixed for the 25th to 27th inst. It is a pity that the exhibition is likely to be less than usually patronised. The third show is the Rose Show, to which a Cottagers' Exhibition is to be added. Then there will be the Chrysanthemum Exhibition, and an effort will be made to obtain a great success, and as large money prizes are to be offered, will probably be a very successful response. Altogether one hopes for a return of prosperity to the Society, and under the management of Mr. P. WEATHERS and an active Council little is likely to be wanting to place its finances on a satisfactory basis, and to obtain the prize of place which all Botanic Institutions ought to hold in regard to centres of commercial activity.

The plant-houses contain species interesting to a young botanist, as well as others that please the public who love the glare of display merely. The half-hardy Rhododendrons in variety, combine sweetness of perfume with delicate colouring, and are very appreciable. The masses of the hardy Rhododendron Drexeri are lovely, the indoor culture softening the colours into a captivating shade of blue. The Camellias are splendid plants for a show house. We were glad to see among the whites, and pinks, and var-coloured double flowers, the high-coloured C. reticulata, and its associated line, the blue-flowered C. blanda, and the remarkably Chandleri elegance, of the soft pink of Saccu's nova, but its flowers being single, and covering a large surface, are more telling. These associate well with the Palms and Tree-ferns in the lofty house. Clivia (Immutabilium) minimum is a splendid indoor straggler, and its flowers will be probably be a similar instance to that one reported in the *Gardener's Chronicle* from the Edinburgh Botanical Gardens, where it was flowering *en masse* under the shade of Sansevierias 60 feet high.

Toxicoploea spectabilis is flowering profusely now, and disposing a fragrance of a less oppressive kind than a Gardenia, or even a Stephanotis. Its cross of white umbels springing from the ovate, glistering coriaceous leaves commands instant attention. Another capital plant of different character, requiring heat however, is Tillandsia lucida. Its stiff, erect peduncle is thrown well above the bracken-like foliage, and carries a flower of unusual brilliancy. It is of bluish-violet, and "kills" all colours in juxtaposition.

The Orchids, and particularly the Cypripediums, are doing well. Both the Selenipedium section and the formal slipper section are fairly well in flower. There was a fine variety of C. villosum and C. Gurneyianum. The backward variety of Calypso was noticeable by reason of its giant pouch. J. A.

NATIONAL CHRYSANTHEMUM.

FEBRUARY 22.—The annual general meeting of this Society took place at Anderson's Hotel, Fleet Street, E.C., on Monday last, Mr. R. BALLANTINE (one of the Vice-Presidents) in the chair, there being a very large attendance. The annual report, read by the Secretary, Mr. R. DEAN, dealt prominently with the Jubilee Celebration of last year, which the report states was carried out with a measure of *decal* beyond the most sanguine expectations of its promoters, and which had enabled the Committee to make an addition of £55 to the Reserve Fund.

The conference was well attended, and the papers read form admirable additions to the literature of the Chrysanthemum. The report deals also with the presentation of a Bronze Jubilee Medal to every society in affiliation with it in October last, the publication of the Jubilee Edition of the *Chrysanthemum*, the work of which was completed in the foreign relations of the Society, and the work of the Floral Committee. Since Jan. 1 of last year 13 fellows and 175 ordinary members had been elected, and 27 societies admitted to affiliation, among them that of Hamburg, the first Chrysanthemum society formed in Germany. A *resumé* of the 5th annual statement was given last week. The sum of £287 11s. was received as special prizes, £360 15s. *od.* as contributions to the Jubilee Fund, including £100 from the Royal Aquarium, in addition to the usual contribution of £200 from the directors. Special prizes amounted to £194 7s. 6d., entrance fees and subscriptions, making 34-1-11 needed for the year, inclusive of the balance in hand at the beginning of the year, £1644 4s. 10d. On the other side prizes and medals had been awarded to the amount of £839 10s., and the remainder was made up of medals to affiliated Societies amounting to £24 9s. 6d., judges fees, cost of banquet, expenses of management, show expenses, &c. The reserve fund now stands at £104 15s., £100 of which is on deposit at the Bank. The Report and Financial Statement were unanimously adopted.

In the course of the evening the two secretaries, Messrs. B. DEAN and C. H. FAYNE were presented each with a gold Jubilee medal and an illuminated address in recognition of their work on behalf of the Society. Silver-gilt Jubilee medals to Messrs. B. WYNN and F. W. SANDERS, respectively chairman and vice-chairman of Committee during the past year; a Silver Jubilee medal to Mr. C. H. FAYNE as editor of *The Journal of Cultivation*, and to Professor G. H. WILLIAMS, R. BALLANTINE, T. BEVAN, J. WILLIAMS, D. B. CRANI, W. H. LEES, II. J. JONES and A. TAYLOR, for services rendered in various ways.

Mr. EDWIN SAINSBURY was re-elected as President; Mr. J. K. STABLETON, Treasurer; Mr. T. W. SANDERS as Chairman, and Mr. P. WATKINS Vice-Chairman of the Committee; Mr. R. DEAN as General, and Mr. C. H. FAYNE as Ex-Officio Corresponding Secretary; and Mr. A. E. STEVENS as Auditor, in the place of Mr. G. J. Ingram, retired by rotation.

A large number of candidates were proposed for election to the thirteen vacancies on the Committee, and the result at the voting showed that Messrs. WYNN, DEAN, WILLIAMS, MOORMAN, LEES, ISOMELLA, HOLMES, CANNELL, REVE, LYNE, NEWELL, GIBSON and HOWE had been returned. Votes of thanks were passed to the President, the Treasurer, and other officers, and to the Chairman for presiding.

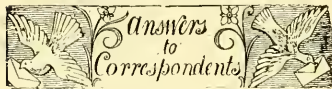
PICEA NIGRA.

This tree, commonly known as Black Spruce, is readily recognised by its regular conical outline, slender, very gradually tapering stem, dark bluish-green foliage, and usually plentiful supply of small, ovate-shaped, purplish cones. Some of the largest specimens I have seen are growing close to the London and North-Western Railway, near Bangor Station, in Camrarnshire. These trees range from 40 to 55 feet in height, with stems averaging 15 inches in diameter near ground-level, the taper throughout the entire length being very gradual, and is all the more pronounced on account of the trunks being branchless usually for three-fourths of their length. Curious enough, these trees are growing not in swampy soil, as is generally associated with the Black Spruce, but in a shallow layer of vegetable mould resting on coarse gravel, and in company with probably the greatest number of the largest specimens of

2s. 3d. per cwt.; Turnips, 10d. to 1s. per 12 bunches; Swedes, 1s. 3d. to 1s. 4d. per cwt.; Carrots, 3s. to 3s. 6d. do.; Onions, English, 4s. to 4s. 6d. do.; do., foreign, 2s. to 3s. 3d. do.; Cauliflowers, 1s. 6d. per doz.; Cabbages, 6d. to 1s. 1d. do.; Celery, 6d. to 1s. 4d. per roll.

TRADE NOTICE.

Mr. P. F. LE SUEUR, well known as a Jersey horticulturist, has taken over the management of Messrs. Lilley Bros.' flower, fruit, and bulb-growing estate, at St. Peters-in-the-Wood, Guernsey.



APPLE AND PEAR PYRAMIDAL TREES: *Young Beginner.* The sort of pruning hitherto pursued may be continued till the trees have arrived at a size beyond which it is not desirable that they should grow. There are then two courses open, one of which is to cut every outward-growing branch back to a lateral shoot having the proper direction; the other is to restrict the length of the terminal annual growth of each main branch to 1 or 2 inches a year. As the best fruits come from the spurs situated near the circumference of the trees, nothing is gained by leaving spurs or subsidiary shoots on the inner parts of the branches, and these should be cut off close to the branches, and all summer shoots, which arise from the branches so treated, rubbed off whilst still soft. The greater part of the pruning should be done in July and August, which will consist in shortening back to one-half their length stout shoots suitable for the extension of the trees or forming fruit spurs, the final pruning of these shortened shoots taking place when growth has almost ceased for the season—say, the end of September.

BLACK NODULES: *C. C.* The black nodules found in "putting mould" are a "sclerotium," or fungus, in a quiescent stage. Probably it is the same as that found in Mushroom-beds, referred to several times in this journal, under the name of *Xylaria vaporiaria*. Your "rotten stuff" may have been mixed with some old Mushroom or Melon-bed material, which would account for these nodules. *M. C. C.*

CORRECTION.—"Crægas." On p. 119, for var. *macrantha*, read var. *macrantha*.—*Hybrid Gardenist*, p. 129, for the signature at foot read *C. B. P.*

CRISPEAN PHOTOGRAPH: *D. McL.* We are sensible of your kindness in offering a photo for reproduction, but having figured two very fine specimens of good cultivation (see *Gardeners' Chronicle* for August 22, 1874, and March 5, 1892), we cannot entertain the proposition to figure another, excepting for some special reason.

DRACENA DRACO: *T. R.* Without seeing the plant we are at a loss to advise you. It may not be well rooted, certainly the temperature of a cool greenhouse is too low for it during late autumn and winter, and if you keep it therein, it will probably go to ground entirely. First see to the roots if any, and if necessary cut the stem to a higher point, and strike it anew as a cutting in heat. Put in sandy soil, and keep in a stove during the cold season. When well established, and therefore furnished with numerous roots, *D. Draco* succeeds out-of-doors during the summer months.

FRESIA: *C. E. W.* It is possible that under the circumstances named, the *Fresia refracta alba* might revert to the yellowish tint of the type, though we do not remember noting an instance of its doing so.

GRUBS AMONG CALCEOLARIAS: *Fangi.* Send some specimens for examination.

GRUBS ATTACKING BEGONIAS AND PRIMULAS: *J. C.* The grubs are those of a weevil, and it is very difficult to eradicate them from the soil of plants, such as Begonias or Primulas, growing in pots. Your best plan would be to sterilize the soil before using it for potting purposes. If you heat it sufficiently upon an oven or stoveholder boiler the grubs that infest the turf in your district may be destroyed.

HERBS: *E. A. Thompson's Gardeners' Assistant.* You do not say what business; but, in any case,

we suspect you require a knowledge of the natural orders. Perhaps the book reviewed in our columns to-day would suit you; but you should, if possible, attend a few lectures first. Oliver's *Lessons in Elementary Botany* would be serviceable.

HYBRIDS: *W. N.* Undoubtedly there are natural hybrids. As to Oxlips, there are various forms, one of which is a hybrid between the Cowslip and the Oxlip; and one is a umbellate form of the common Primrose, and one is considered to be a distinct species. There are also various wild hybrid Thistles and Orchids. It is impossible to draw any definite line between cross-breeds between so-called varieties, and true hybrids between reputed species. As *Asa Gray* said, species are "judgments," and all men's judgments are not the same.

LOTUS: *K. B.* Assuming that you mean a *Nelumbium* or *Water Lily*, you might grow it in a large tub in a warm-house. Plant in a shallow basket in loamy soil, the surface of which may be covered with coarse gravel, and deposit the basket a little below the surface of the water. At Kew the *Nelumbiums* are grown in corners of the *Water Lily House* in soil always saturated with water, but not deeply flooded; in fact, a swamp.

NAMES OF FRUITS: *W. T. Apple Peasgood's Nonsuch.* *C. W. S. Pear Easter Beurré.*—*J. M.* Cannot determine; too much bruised; too late.

NAMES OF PLANTS: *Correspondents not answered in this issue are requested to be so good as to consult the following number.*—*G. B. L.* Both varieties of *Oncidium maculatum*, a tolerably common species first imported from Mexico sixty years ago, when it was known as *Cyrtorchilus maculatum*.—*W. J. S., Herefordshire.* 1, *Ophiopogon spicatus*; 2, *Lycopodium japonicum*; 3, *Polypodium appendiculatum*; 4, *Adiantum capillus veneris*; 5, *Prinula verticillata*.—*P. G. S.* It is the variety known as *Cyrtopodium insigne Sylhetense*, which is distinguished by the short labellum. Yours is rather broader in the petal than usual.—*J. S.* *Oncidium lamelligerum*.—*H. J. W.* *Dendrobium fimbriatum oculatum*.

PROPAGATING WHITE MARQUERITES: *Gardener.* As soon as cuttings of fair size can be obtained, place them to the number of half-a-dozen, round the sides of a 6-inch pot, in a mixture consisting of leaf-mould and sand in equal proportion, plunging the pots in a bottom-heat of 60°, and top-heat of 65°. In three weeks the cuttings will be struck, and ready for potting, which should be done in 4-inch pots. If he desired to flower them in pots, a suitable soil will consist of three parts loam, one of sand, and if the soil is of a sandy nature, one-quarter of the whole may consist of leaf-mould in place of the sand. When used for beds, autumn-struck cuttings are preferable. These should be taken about September from plants growing in the open, and pricked out in sandy soil in a cold frame, bracken or mats being thrown over the glass in severe weather—treated, in fact, the same as bedding *Calceolarias*. They are harder when thus treated, and much time is saved.

ROOTS OF VINES: *S. H.* The border appears to have been sodden, and the roots suffocated for want of air. The state of the roots could scarcely be worse.

SEED-BOXES, LEAF-MOULD, AND FUNGI: *Fangi.* It is not surprising that fungus gives trouble when such ill-prepared leaf-mould is employed as that which you sent to this office. Leaf-mould is an almost indispensable ingredient in potting-soils, and should not, in a general way, be employed, except in a well-decayed condition; and to obtain it, the leaves of Oak, Chestnut, Beech, Birch, Willow, Alder, and Horbeam, being more suitable than those of the Sycamore, Plane, Maple, Walnut, Elm, and others of like soft texture, should be gathered into heaps and enclosed by sheep-hurdles or similar contrivance, so as to prevent their being blown about. It will take from two to three years to thoroughly decompose a heap, and in the second year the heap should be turned with leaf-forks, and the decayed central portion separated from the rest, sifted through sieves or a screen, with a 3-inch mesh, the rough part thrown back on the heap, and the finer part put under cover for another year before using it. The heap of leaves, now partially rotted, should be mixed together and formed into a new cone-shaped heap, to still further decay. The addition of some warm stable-manure will, at this stage, aid fermentation and rotting. At the end of the second year the whole will be fit for another

turning over and separation of the decayed portion as before, and at the end of three years the entire heap will be reduced to the condition of leaf-mould. Each year should have its separate leaf-heap, and decayed and partially decayed leaf-moulds should be put in heaps kept apart, and the year of collection marked with a stout label. Chips of soft wood, any kind of bark, soft shoots, small branches, old Pea and Bean-sticks if rotted in a heap out-of-doors, and similarly treated, fern, when quite decayed, a capital material for mixing with the peat and loam used in potting *Ferax*, *Anthriscus*, *Pothos*, terrestrial *Orchids*, *Gloxinias*, *Achimenes*, *Camellias*, New Holland plants of nearly all species, *Dracenas*, &c. You might try the use of decayed clear line-water in arresting the growth of the fungus in the seed-boxes.

THE HEAT OF HOTBEDS: *G. W.* The Melon succeeds on a bed having a steady warmth of 80° the Cucurbitae scarcely needs so much heat, and 75° to 78° suffices. With stable-manure alone, the heat will be of short duration once it has declined to these figures, but it would be much more lasting if you could mix with the latter an equal quantity of the leaves of the Oak, Chestnut, and Beech. Failing these, the necessary degree of heat may be kept up by means of linings of properly prepared stabling applied when the heat of the bed, taken with the plunging thermometer, is seen to be declining.

WIND-BOXES IN A NORTH ASPECT: *H. S.* Satisfactory results would be obtained by planting the following:—Cut back *Fuchsias*, not less than two years old; *Cinerarias*, raised especially for the purpose; some of the dwarfier *Asters*, or *Michaelmas Daisies*, as *A. acris*, 2 feet, white; *astivus*, blue, 2 feet; *alpinus*, 1 foot, bright purple; and *caeruleus*, albaeus, blue purple, 1 foot; *argenteus*, or *albus*, 1 foot; *caucasicus*, white, 2 feet; *leucostylis*, white, 1 foot and less in height; *peregianus*, bluish-purple, 1 foot; the annual "Asters," *Callistemma hortensis*, might also be employed, growing them in pots or in beds in a sunny place, and transferring them to the boxes after the plants had got well into bloom; the same might also be done with single and double flowered *Pelargoniums*, such as are ordinarily used in the flower garden, except that pot culture only would have to be resorted to; various species of *Lily* might be similarly treated, choosing those of moderate height, as *Catesbeii*, *concolor*, *japonicum*, *roseum*, and the varieties of *L. speciosum*. Shrubs with variegated foliage might be sprightly used (as *Isols*) to the flowering plants, as *Azalea*, *Euonymus*, *golden Thu*, and a *Calceolus*, silver and golden *Privet*, &c. As *tallies*, *Linaria cymbalaria*, *Richard Sieboldii*, *Lithospermum prostratum*, *Lysimachia Numeantaria* (Moneywort), &c., will do well.

COMMUNICATIONS RECEIVED.—*S. B. D.*—*Col. T. R. Y.*—*A. S.*—*W. N.*—*L. G. A. F. B. E. A.*—*Mr. P.*—*A. F. B.*—*Royal Botanic Society.*—*G. H. C.*—*G. H. M.*—*W. H. W.*—*R. J.*—*H. P.*—*A. G. L.*—*J. J. W.*—*J. Douglas.*—*A. D. W.*—*Ed. Bennett.*—*J. A.*—*A. D. L. P.*—*W. Epp.*—*D. A.*—*J. Hill.*—*A. F. B.*—*H.*—*G. H.*—*McColloch.*—*Rusticus.*—*L. P.*

SPERMATOPHYTES, &c., RECEIVED WITH THANKS.—*W. T.*—*A. S.*—*U. D.*—*Bethin.*

CATALOGUES RECEIVED.

JAS. COCKER & SONS, Aberdeen.—(1) *Roses*, *Herbaceous Plants*, *Fruit* and *Ornamental Trees*, &c. (2) *Seeds* and various *Plants*.

DOBIE & DICKS, 65, Deansgate, Manchester.—*Seeds.*

JOS. LAMB & SONS, Strandpark Nurseries, Forest Hill, London, S.E.—*Orchids.*

LEFÈVRE & SONS, Clout, France.—*Fruit Trees*, *Lilies*, and other *Bulbs*.

GARDENING APPOINTMENTS.

MR. G. HUBBARD, previously employed in the gardens Little Dalby Hall, Melton Mowbray, as Gardener to Dr. Power, The Rectory, Melton Mowbray.

MR. J. HAMMOND, until recently General Foreman at Highnam Court Gardens, Gloucester, as Head Gardener to Col. HANBURY BARCLAY, Tingriths Manor, Woburn, Bedfordshire.

MR. J. FARQUHARSON, late General Foreman at Bridge Hill Gardens, Derbyshire, as Head Gardener to R. O. LAMB, Esq., West Denham Hall, Westwood-on-Tyne.

MR. HENRY ADAMS, Gardener to W. PARK BOWENS, Esq., Cherington, Sluip-ton-on-Stour, previously Foreman at Daylesford Gardens, Clipping Norton, and Basing Park Gardens, Alton, Hants, has been appointed Gardener and Bailiff to Mrs. MACKENZIE, Brixingbury Hall, Berks.

MR. NEIL MESSER, late Head Gardener at Dunkerron Castle, as Head Gardener at Bronaghina, Co. Kerry.

MR. JAMES DUNBAR, from Beechhill Nurseries, Edinburgh, as Head Gardener at Dunkerron Castle, Co. Kerry.



THE

Gardeners' Chronicle.

SATURDAY, MARCH 6, 1897.

RECENT CHRYSANTHEMUM LITERATURE.

THESE are, of course, many readers of the *Gardeners' Chronicle* who remember the Centenary Festival and Exhibition held under the auspices of the National Chrysanthemum Society in 1890. They will, no doubt, recall the prophecy of certain well-meaning but happily short-sighted people who declared that, after such an exceptional effort, the popular flower from the Far East was destined to enter upon a period of decline, and that little else remained to be done to maintain its popularity.

But these worthy folk could not foresee the advent of a Calvat, whose entrance into the ranks of seedling-raisers since the date mentioned has almost entirely reversed the old order of things; nor could the prophets be expected to count upon the extraordinary exertions of the executive of our leading Chrysanthemum Society to celebrate, as was so well done last November, the fiftieth anniversary of its existence. But to those who know the Chrysanthemum best, its history since its first introduction into Europe more than a century ago is little else than a series of surprises and departures from the beaten track.

A very fair idea of the importance of any subject, be it floral or otherwise, may be gained from its literature. Since the year in which the centenary was celebrated with so much success, the Chrysanthemum has been dealt with in a most liberal manner by the horticultural press both in England and America.

Apart, however, from these fugitive contributions, many of which are of a high order of merit, the Chrysanthemum has received a large measure of support from the pens of authors of independent treatises. It is not an uncommon thing now-a-days to find some of the leading nurserymen giving their trade catalogues a semi-literary appearance by including essays on cultivation, and occasionally matter of a more technical nature. Amongst some of these commercial publications it is difficult at times to say which should be regarded as mere trade catalogues, and which should be placed on a higher level, because the main object of them is to sell the goods of those who are responsible for their publication.

Without, however, attempting to draw any such line of demarcation, it will easily be seen that besides the higher class of nurseryman's catalogue, the literature of the Chrysanthemum has received substantial additions from the pens of authors whose direct object has not been the advertisement and sale of plants. Upwards of forty independent books, pamphlets, and treatises dealing with the cultivation, description, exhibition, or other subjects allied to the Chrysanthemum have been published by horticultural writers during the past seven years, a number never equalled in any similar period during the

history of the flower. They vary from mere pamphlets to works of some pretensions, and have been contributed from many sources at home and abroad. This fact is well worthy of mention to dispel any lingering mistaken notion that may even now exist as to the approaching decline of the popularity of our favourite.

Chief among cultural treatises are the handy manuals] by Mr. Edwin Molyneux, Mr. J. Morton, and M. Anatole Cordonnier, the representative writers for England, America, and France. Among the descriptive lists, official and otherwise, the catalogues of the National Chrysanthemum Society, the American Chrysanthemum Society, and those compiled by M. de Meulenaere, of Ghent, deserve a special mention. Then, from an artistic point of view, such publications as Mr. Inai's *Kikkwa Meiji-Sen*, Mr. Ogawa's *Chrysanthemums of Japan and the Golden Flower*, *Chrysanthemum*, a very finely-executed American art volume, occupy a high rank, and although not in any case of a practical nature will be much appreciated and valued by those admirers of the Chrysanthemum who have also a tincture of the bibliophile in their constitutions.

The years most prolific in additions to the bibliography of the Chrysanthemum since the stir consequent upon the centenary celebration are as follows:—1891, when six new books were published; 1892, when there were eight; 1894, when nine new works appeared, and last year when there were as many as twelve.

Of these twelve, England contributed five, and it will be almost needless to remind the reader that early in the year, Mr. R. Owen and Mr. W. Wells issued handy little cultural guides, which were shortly afterwards followed by Mr. H. J. Jones' excellent *Chrysanthemum Album*, a new departure in every respect. The National Chrysanthemum Society, as a part of its jubilee programme, published a new and revised edition of its official catalogue, and there was also a small pamphlet on Chrysanthemum culture in the Salisbury series of garden produce handbooks.

The French were also responsible for the same number. M. Anatole Cordonnier's *Le Chrysanthème à la Grande Fleur*, is at once one of the best works of its kind from any source, and it is not at all to be wondered at that a second edition has just recently been called for. MM. Chabanne and Choulet as joint authors, and M. Raphaël de Noter were the next in the field with small cultural essays, and then M. Georges Truffaut issued in separate form his *Étude sur la Culture et la Végétation des Chrysanthèmes*, which was originally printed in the *Journal of the National Horticultural Society of France*. The last to be noticed from France was a most interesting Monograph by M. Henri L. de Vilmorin, entitled *Le Chrysanthème, histoire, physiologie et culture en France et à l'étranger*, in which this eminent horticulturist very fully and ably deals with the subjects of his essay in a most delightful manner, and the work has the advantage of being embellished with a goodly number of well-executed and characteristic wood engravings.

Belgian Chrysanthemum literature in separate form was represented by one work only, viz., the second supplement to M. O. de Meulenaere's valuable catalogue. This gentleman has earned the thanks of all literary Chrysanthemum growers by the preparation of his useful catalogues, in which are to be found much matter relating to dates and raisers' names that cannot be found elsewhere, and which render his catalogues of infinite service to those who write for the press.

The last new Chrysanthemum treatise for 1896 to be noticed, emanates from the United States. It is Bulletin 112 of the Cornell University Agricultural Station, and bears the title of *The 1895 Chrysanthemums*, by L. H. Bailey, Wilhelm Miller, and C. E. Hunn. It is similar in style to the one from the same source the previous year, called *Recent Chrysanthemums*, and contains much matter of interest to other than American growers.

But quite separate and distinct from the above-mentioned works, one of the most promising features in connection with Chrysanthemum literature is the recent appearance of periodical publications. One would have thought that we in England, with all our protestations of affection for the flower would have long since started and loyally supported a weekly or monthly magazine specially devoted to the dissemination of Chrysanthemum news. The French, however, simultaneously with the founding of their three new Chrysanthemum societies, have already shown us the way.

The first is the *Nord Horticole*, the official organ of the Northern French Chrysanthemum Society, a bright little monthly that was first issued in May last, and which ever since has very fully dealt with the Chrysanthemum in every conceivable manner, giving portraits and biographical notices of many of the principal French growers. The special double Chrysanthemum number for November last was full of interesting contributions, and this publication, as a Chrysanthemum journal, occupies a prominent position.

The Chrysanthemum section of the National Horticultural Society of France has also issued two numbers of a new bulletin dealing exclusively with the operations of that section. Reports of visits to the establishments of well-known growers, selected lists of varieties for various purposes, and other articles have appeared; but unfortunately, up to the present, the interval between the numbers is a somewhat lengthy one.

The last of the new French serial publications is entitled *Le Chrysanthème*, and is the organ of the French National Chrysanthemum Society. This was first issued in September last, and has been regularly supplied to members every month since. It is edited on somewhat similar lines to the one just mentioned, but is a little more comprehensive, for the contents are not exclusively confined to the operations of the society which issues it. The title is well chosen, and the work itself needs but a little expansion to become a thoroughly representative Chrysanthemum journal; and is a most creditable publication, considering the Society is only a little over the first year of its existence.

Such is a brief outline of the literary activity displayed in a popular cause during the past twelve months, or thereabouts; and, in my opinion, it is the surest guarantee that we are as yet a long way from the anticipated decline of the flower that, considering its season, has no rival worthy of the name. *C. Harman Payne.*

NEW OR NOTEWORTHY PLANTS.

CYRANTHUS × MARIAN.

At last, after some years of endeavour in crossing species of the *Monella* section of *Cyranthus*, I have succeeded in producing one raised from *lutescens* by pollen of *C. Tucki*, which that great authority on the genus, Mr. J. G. Baker, at once pronounced "a very fine plant, and an excellent addition to the genus, notwithstanding its hybrid origin." In its

general features it may be said to have the strong habit and robust stature of *C. Tuckii*, bearing a many-flowered umbel (not few-flowered, as in *C. lutescens*), with much of the yellow colour and graceful habit of *C. lutescens*, which it also follows in the recurved or spreading character of the perianth segments, and in commencing to flower very early in the spring. The leaves, which are produced together with the flowers, are bright green, and when mature they measure about 1 foot in length. The stout peduncle is nearly 2 feet in height, and bears an umbel of eight very showy flowers, on pedicels varying from 1 to 1½ inch in length. The curved perianth-tube is 2 inches long, and the segments are spreading. The ground colour of the flower is yellow, the tube is suffused with light pinkish-orange, which deepens as it approaches the perianth-segments, which are a dark shade of scarlet at the back, and yellow tinged with red on the face. The bisertate stamens are just visible in the tube, from which the style slightly projects. I name it after my little daughter, and thus keep it clear of the true species. In crossing these plants I have had some curious experiences, which tends to confirm my previous experiences, viz., that the hybridist should be shy of crossing a free-seeder, or rather of persisting in crossing it after failure has been demonstrated. I tried crossing several species, both of the *Monella* and the *Gastronema* section, but either they did not produce seeds, or the weak seedlings raised from the seeds failed to live. At last I imported a very free-flowering but rather low form of *C. angustifolius*, which I named *C. a. aurantiacus*, and on its flowering, after carefully removing its own anthers before they were of use, I crossed it with several species, and it took equally well with the pollen of each. But on the seedlings flowering they were one and all *C. angustifolius aurantiacus*, and nothing else. Occasionally, either in the bud or in the fading flower, they sometimes exhibited faint traces of other influence, but no one but a keen observer who knew how they were produced could distinguish it. On trying it again, the result was the same. There seems to be a strange individuality about some species which we may regard as sectional types, which prevents perversion, the first generation, at least. I have had several marked instances of it. *James O'Brien.*

PATTON'S SPRUCE.

By the increasing number of travellers who explore the high mountains of the Pacific States, which are its only home, the lovely Mountain Hemlock is now usually known as Patton's Spruce. Perhaps best considered a Hemlock, this tree differs from other Hemlocks in its long, narrow cones and in its more acute leaves, usually keeled on the upper surface, and its bilobed pollen grains; and in general appearance it is one of the most distinct and beautiful of the North American Conifers.

Tunga Pattoniana, as botanists call this tree, was discovered only about forty-five years ago near Mount Baker, in Northern Washington, by the Scotch collector Jeffrey, and was named out of compliment to George Patton, a Scotch lawyer, who was given to the cultivation of exotic trees, and was one of the subscribers to the fund which enabled Jeffrey to explore the forests of North-western America.

Patton's Spruce is now known to range from Alaska, where it grows at the level of the sea, southward along the mountain ranges of British Columbia, west of the continental divide, the two slopes of the Cascade Mountains of Washington and Oregon, and the California Sierra Nevada, where probably, on the upper waters of some of the tributaries of King's River, it finds its most southern home. It is a tree of high altitudes, and, except at the extreme north, it is found only near the timber-line, forming, with *Picea alba* and *Abies lasiocarpa*, extensive forests.

Patton's Spruce is a tree of marvellous grace, with drooping branches clothed with thickly-clustered leaves, abundant elongated narrow cones, which hang on slender, spray-like branchlets, and on some individuals are bright purple, and light yellow on

others in the same grove. The foliage, too, differs in colour, being on some trees dark green, and on others light blue-green, a peculiarity which has led to some confusion of nomenclature, the blue-leaf form often appearing in gardens as *Teuga* (or *Abies*) *Hookeriana*.

Patton's Spruce grows in the greatest perfection on the slopes below Crater Lake, in the Cascade Mountains of Southern Oregon, forming here extensive and nearly pure forests, in which individual trees 100 feet high, with stout massive stems 5 or 6 feet in diameter, are abundant. Such a growth is probably not exceptional, and this tree is abundant and conspicuous at the timber-line of Mount Hood, Mount Ranier, and on the Selkirk and other mountains of British Columbia. On Mount Ranier, with *Abies amabilis* and *Abies lasiocarpa*, it forms a large part of the forest growth, growing above the banks of glaciers in great luxuriance. Some idea of the upper forest-belt on Ranier can be obtained from our illustrations in this issue; that on p. 6 displays the snow-covered summit rising 8000 feet above the timber-line, with scattered trees of Patton's Spruce on the slope in the foreground, and in the illustration on p. 7 the trunks of this tree are displayed in more detail.

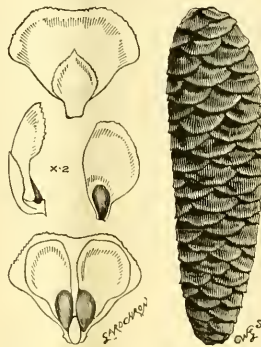


Fig. 42.—*TSUGA PATTONIANA*: CONE, SCALE AND SEEDS.

In Washington and Oregon, Patton's Spruce grows at elevations of from 5000 to 6000 feet above the sea-level, but further south the timber-line is carried higher; and John Muir, who describes this tree in his *Mountains of California* as the "most singularly beautiful of all the Californian Conifers," found it growing on the Sierras up to 10,000 feet altitude; and on the edge of Lake Hollow, at an elevation of 9200 feet, measured a trunk 19 feet 7 inches in circumference at 4 feet above the ground. "No other of our alpine Conifers," he tells us, "so finely veils its strength. Its delicate branches yield to the mountain's gentlest breeze, yet it is strong to meet the wildest onsets of the gale—strong not in resistance, but in compliance, bowing snow-laden to the ground, gracefully accepting burial, month after month, in the darkness beneath the heavy mantle of winter. Every tree-lover is sure to regard it with special admiration. Apathetic miners, ever seeking only gain or gold, stop to gaze on first meeting it, and mutter to themselves, 'That is a mighty pretty tree.' The deer love to lie down beneath its spreading branches; bright streams from the snow that is always near ripple through its groves, and *Bryanthus* spreads precious carpets in its shade. But the best words only hint its charms."

Introduced into Scotch plantations by its discoverer, Patton's Spruce has shown that it is fairly adaptable to altered climatic conditions, and it may now be seen in many European collections; and although it has not yet had sufficient time to attain maturity in

cultivation, it is an ornamental tree of much promise in several European countries. Patton's Spruce, moreover, is one of the comparatively small number of the Conifers of the Pacific States which thrive in the east; and although, like most alpine Conifers, it grows extremely slowly at the sea-level, it has for several years withstood without injury the changeable winters and dry summers of the New England climate. *Garden and Forest.* [The woods illustrating this species first appeared in the *Gardeners' Chronicle* on July 2, 1892, and June 3, 1893. Ed.]

THE ROSARY.

ROSES IN EARLY SPRING.

WE have many kinds of exotic plants in our garden, some of them rare, and many of them beautiful; but there is nothing in the greenhouse or hothouse equal to the Roses which are now in leaf and flower. The green leaves, with a small globule of water at the tip of each serrature, are very beautiful in the early morning, and how restful to the eye! By the end of February we always begin to cut the flowers of our Roses, and continue to do so until Roses are plentiful out-of-doors. We have no convenience for planting-out Roses under glass, therefore the plants must be grown in pots, and we have no place that can be specially set apart in which to grow Roses for forcing. But where there is a will there is a way, else that may seem difficult. My practice is to prune the Roses about October. The earliest vinery is started about the middle of November, and the Roses, which have been carefully prepared, are started in this house in a minimum temperature of 45° to 50°. I like the old-fashioned method of putting a heap of fermenting manure inside the vinery; this not only gives off ammoniacal moisture sufficient for the Vines, and saves the frequent syringing and "damping down" which causes an irregular degree of moisture in the atmosphere. Some cocoa-fibre or spent Mushroom-bed may be placed on the top of the manure-heap, and on this the Roses are stood. Care is taken not to allow a violent heat to burn the roots, which might easily occur if rank stable-manure is used. If the manure is fresh it ought to be thrown into a heap and be turned over two or three times at intervals of five or six days before taking it into the house.

The only pests that attack the leaves thus early are the green aphid and mildew; a very light dusting of flowers-of-sulphur destroys the latter, and the aphid is killed by fumigating with tobacco-smoke. When the flowers are pretty well advanced, it is better to remove the Roses to a warm greenhouse, for by that time the temperature of the vinery will have advanced to about 60° minimum, and flowers opened in this temperature in February are flimsy. Care should be taken of the Rose plants, so that the foliage may be kept in good condition; and when the flowering period is over, the plants must be carefully looked after until the wood is well ripened.

This is what I alluded to above as being "careful preparation," for how often do we see the plants turned out-of-doors as soon as they have done flowering! Now, it is a fact that few plants are attacked by so many pests as are Roses. Green-fly attacks the points of the young growing shoots, and red-spider turns the older leaves of a rusty-brown colour; while the troublesome fungoid growths, Orange-fungus and mildew, are seldom absent. I saw a collection of pot Roses once at the end of September, and every plant was infested with all four pests. Under such conditions how could the young wood become developed or well ripened? Hybrid perpetuals are comparatively hardy, and do not suffer much from a deluge of rain, or from cold east winds after April comes in; but it is not so with the Tea-scented varieties. They require more shelter, and should not be placed out-of-doors until the end of May—indeed, it would be better if they were not placed out-of-doors at all, even in summer; but in that case they should be given plenty of space, and exposed to light and air. The plants should be rooted in August, to allow the roots to grow freely

into the fresh soil before the end of autumn. A compost of good turfy-loam four parts, one part leaf-mould, and one part decayed manure, with about a 6-inch potful of bone-dust to each barrow-load of the compost will suit them well; but Tea Roses, like a rather lighter material, which may be obtained by the addition of some light fibrous peat. Pot rather freely. *J. Douglas.*

ENGLISH ORCHARDS.

The following is the text of Mr. George Gordon's lecture on "English Orchards," given before the Society of Arts on Wednesday, March 3:—

It would, I am fully persuaded, be not less gratifying to you than agreeable to myself were I in a position to speak this evening in terms of warm praise of the present condition of English orchards, and in a spirit of hopefulness with regard to their possibilities. It would also be extremely pleasant if I could, with strict regard to truth, describe them as having no superiors in any part of the world, and as so rapidly increasing in productiveness as to justify the hope that the time is within a measurable distance when they will yield supplies sufficient to meet the large and increasing demand for fresh fruit. Still further, I should be glad to speak of them as so judiciously planned and skilfully managed that they might serve as models for the guidance of countries and forests most grovener. It would not be less pleasant to dwell upon the glorious pictures the orchards present in spring when the trees are enwreathed with their snow-white or delicately-tinted blossoms; and in autumn when the supple branches are bending beneath their precious burden of fruit, and also to refer to the profit their crops give their owners, and the satisfaction the fruit affords those who have to depend upon the markets for their supplies. Unhappily, most of these pleasures are for the present denied me. Instead of giving expression to feelings of satisfaction with what has been accomplished by owners of orchards, it is my duty to place before you facts which to those not fully conversant with the subject might well appear incredible in the light of the remarkable advance that has been made in all branches of industrial activity during the past half-century. I have, indeed, to bring before you a state of things in relation to the orchards of England, so grave as to deserve the most careful consideration of all who are interested, however indirectly, in the prosperity of the owners and tillers of the land; and I earnestly hope, as one result of this meeting, that attention will be aroused to the necessity of a drastic reform in orchard management.

The question of fruit culture is one that has for many years attracted a large share of my attention, and I have endeavoured to keep it constantly to the front, not only in discussing its various aspects in the pages of the *Gardeners' Magazine*, for whose policy and management I am responsible, but, as far as my somewhat exacting professional duties will permit, by work in other directions. Ten years ago I initiated a series of conferences at the Crystal Palace, which were held in conjunction with the autumn exhibitions of fruit, and at the gathering in the autumn of 1890 I submitted a report on the condition of fruit culture in Ireland, that report being founded on investigations that I had made by myself, and at my own cost, in the course of the previous summer. The success of those conferences stimulated the Royal Horticultural Society, the Fruiterers' Company, and several of the principal provincial horticultural associations into activity, and as the result of the combined efforts the area under fruit has been increased during the decade by 18,925 acres, and considerable improvements have been effected in methods of procedure so far as they relate to market garden plantations. With the exception of the first-mentioned society the several associations appear to have grown "weary of well-doing" in the advancement of profitable fruit culture, and have returned to their old methods, and the Royal Horticultural Society has shrank from grappling with the somewhat difficult question of the orchards. We are therefore now in the position of having a continuously increasing demand for fruit in all our populous centres, with tens of thousands of acres of the finest land in England devoted to fruit trees in so dilapidated and wretched a condition that they cannot possibly pay over the rent of the ground, without one of the several hundreds of societies that ostensibly exist for the advancement of horticulture and agriculture being engaged in making a systematic endeavour to improve their condition. I regret also that, with some notable and praiseworthy exceptions, Technical Education Committees are not less oblivious of their responsibilities in this matter than are the societies immediately concerned with the affairs of the farm and garden. In proof of this, I have only to point to the fact that in counties where the orchards are in a terribly neglected state, large sums of money are annually expended in teaching painting on china, music, dancing, and similar accomplishments, while not a penny, so far as I have been able to ascertain, has been spent on the education of the occupiers of orchards in their management and the utilization of their produce. It would seem, that the chief object of societies that profess to foster horticulture and agriculture, and of education committees in counties, should be to diffuse information upon matters having direct relation to the work of those engaged in the cultivation of the land; for not only the cultivator is well informed upon the principles and practice of his art, can be hoped to obtain a full return for his labours.

Unfortunately these public bodies do not, as a rule, hold the same views with regard to their duties as myself, and considering it to be utterly futile to expect them to take the initiative in the adoption of some means by which an improvement could be effected in the orchards, I carefully considered what could be accomplished by private effort. As the doctor must diagnose a disease before he can properly prescribe for his patient, it appeared to me that one of the first steps towards an amelioration of the condition of our orchards would be to direct attention to the state of neglect and decay into which they have fallen by means of absolutely exact reports founded upon careful investigation

proper performance of the duties. The investigations extended over nearly two years, and as the result, and of these inquiries I have been able to publish full reports upon twenty-four typical English counties. In passing I would mention, as indicating the care and thoroughness with which the investigations were made and recorded, that, although I have received several hundred letters in reference to the reports, in no instance has their accuracy been called into question. I had previously gone over much of the ground myself, and it was a great satisfaction to me to find how closely my instructions that the condition of the orchards examined should be described with exactitude and without embellishment were being followed. One had need have something that will give rise to a feeling of satisfaction in connection with the orchard question, for the record is one that can hardly fail to fill the mind with profound regret. It brings into strong relief the fact that while in the whole of the counties fruit is grown in private gardens, and in many market garden plantations in accordance with the most advanced practice, orchards have for the most part been so neglected as to have become a blot upon the landscape and a discredit to their owners. I shall not weary you by reciting any considerable proportion of the reports; but to convey an adequate idea of the state of things that now obtains, it will be necessary to give a few short extracts from those on the counties specially favourable to the profitable cultivation of fruit.

As you are well aware, it is a quite common occurrence to speak of Kent as the "Garden of England," and so far as our hardy fruits are concerned, it might justly be described as the "Garden of Warlike Warriors." For numbers of apples, cherries, pears, and plums be grown to a higher degree of perfection than within its boundaries. It is a matter of common knowledge that the most advanced practice obtains among a section of the fruit growers of Kent. Yet what do we find? For an answer to the question I must turn to the report on the county:—"An orchard of standard Apples soon gave me material for survey; the field was one of some 20 acres, and the trees seemed to be about fifteen years old. I was struck by their miserable appearance. In the whole field there was hardly one that looked healthy, and with but few exceptions they were dying of canker, being covered with great gaping wounds and leafless branches. Some were bearing fruit, but in appearance and quality it was of the most wretched description. It will go into the market, of course, stunted, specked, and discoloured as it is, and come into competition with large, fresh-coloured American produce." In the reference to another district, we are told: "I came upon as instructive an example how not to do it in fruit growing as could be found in the whole kingdom. A peculiar whiteness on the trees, as though they were silvery with a fall of summer snow, attracted my attention, and on getting amongst them I found, as I expected, that they were attacked by American blight. But what an attack! The sight of those trees, thick with heavy masses of the loathsome pest on trunk, limbs, branches, and spurs, will not quickly fade from my memory." Speaking of the common Black Plum which is so largely grown in some parts of Kent, more especially in the Ash and Sandwich districts, the report states, and I quote it as bearing upon a point to which I shall have to refer later: "We have heard the old story about Plums rotting on the trees. We shall hear it again until some of the hundreds of thousands of trees, the produce of which a wise public will hardly buy at any price, are swept away or grafted with sorts that the public want." If we find, in the fair county of Kent, trees dying in consequence of their having been improperly planted, or from insect infestation, and of orchards that are unprofitable because they consist of inferior varieties, it is not surprising to find in proceeding westward, that the orchards of Sussex, Hampshire, and Dorset, are also in a wretched plight. I do not, however, purpose detaining you with extracts from the reports on these orchards.

(To be continued.)

METHODS OF PROPAGATION.

(Continued from p. 137.)

HERBACEOUS PERENNIALS.—The white and other varieties of the useful Everlasting Pea (*Lathyrus latifolius*) are best increased by their roots, and the former should have a place in every garden and cool conservatory, as its abundantly-produced pure white flowers are beautiful and enduring when removed from the plant. *Lathyrus tuberosus* can be indefinitely increased by division of the roots, cutting between the small tubercous swellings, which contain bacteria, which of late have founded a new theory of the nitrification of the soil. The increase of some species of herbaceous perennials is possible only by means of the roots, and it was a long time before I hit upon the right method for that useful and pretty *Lychnis*, the double form of *Lychnis vespertina*, which in its mature growth, is what is generally called "pippy," i.e., hollow, and will not strike even if the young shoots are taken when they first spring from the crown in the early period of growth, nor will the small laterals with a heel of old wood; but take up the plant, and

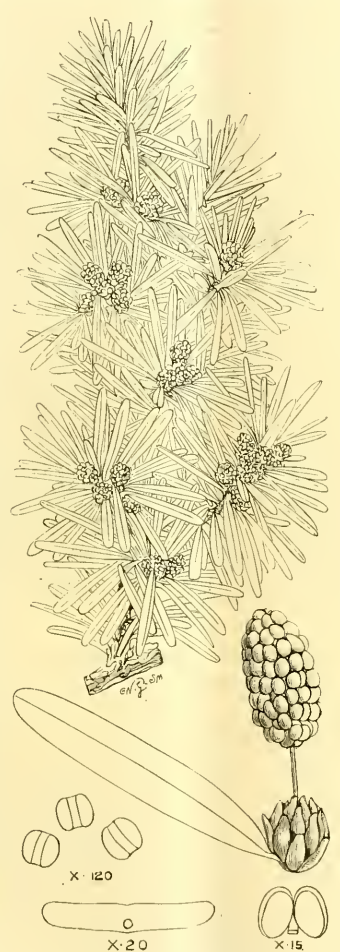


Fig. 43.—*TEUO, PATTONIANA.*
Shoot with male flowers; a flower magnified; cross section of leaf, and other details. (See p. 150.)

tions. It was accordingly decided to investigate them on behalf of the *Gardeners' Magazine*, and publish the results of its investigations. The task was one not to be lightly entered upon, and I confess that it gave me much anxiety. To be of value the investigations had necessarily to be made in a thorough manner by an expert possessed of keen powers of observation, and also well versed in every phase of fruit culture, and full investigations carried out on those lines over the whole of England could hardly fail to prove very costly. Happily, the proprietors of the journal readily consented to the heavy expenditure being made, and I was fortunate in engaging as special commissioner an expert possessing in an eminent degree the qualities essential to the

shake out most of the soil from among the root-fibres, and then select the stoutest roots and cut them into pieces about 3 inches long, and pot them firmly round the rim of a 32-sized pot, water in to render them firm in the soil, then put into a cold frame to enable them to gradually callus over. When this takes place, they may be left to Nature, but do not despair of success if no result is shown quickly, as oftentimes there is no show of growth for at least twelve months, though the fragments of roots keep sound and plump. To hasten matters, plunge the pots up to the rim in a half spent hotbed, and cover with glass, giving air now and then to prevent a minute fungus (mildew) attacking them. When the young shoots appear from the crown, afford air to ripen these, and when this has occurred, the plants may be potted singly or bedded out in a suitable nurse bed. During the growth look out constantly for slugs big and little, which attack the young growing shoots, eating them off close as fast as they appear.

THE YUCCAS,

with their grand spikes of creamy-white flowers, exhibit to the observant eye a fitness for propagation by means of the roots, as, especially when a plant has flowered, numerous buds appear on the larger roots, all of which, when removed, form good plants in a short time. I would more especially name *Y. stenophylla*, *Y. glauca recurva*, and *Y. gloriosa*; whilst *Y. filamentosa* and *Y. vivipara* increase themselves with sufficient rapidity as a rule, and are more at home in the herbaceous border than solitary plants on a lawn. The varieties of *Y. alofolia* are cool conservatory plants, but may be propagated in the same manner.

CLEMATIS.

Roots to serve as stocks for grafting purposes are raised from divisions of the roots of *C. vitalba* and *C. viticella*, but these are more often raised from seed than by division.

BIGNONIA RADICANS MAJOR

and *B. grandiflora* are grafted on *B. radicans*, and the fine greenhouse climbers, the *Tomemas* (*Bignonioides*) succeed on the same kind of stock. I name this *en passant*, as I think it was omitted from my paper on "Inside Grafting."

I will conclude this section of my notes by merely appending a list of plants easily propagated from their roots, though I do not assert that this by any means exhausts the list:—*Anemone japonica* and its varieties, *Doronicum verum*, *Anchusa italica*, and other *Anchusas*; *Acanthus*, *Achillea ptarmica*, *Aconitum*, *Aphedonia ramosus*, by tuber-bearing roots; *Bocconia cordata* and *B. japonica*; *Calystegia pubescens*, fl. pl., and other varieties; *Catananche*, *Campanula* in variety; *Centaurea montana* and its varieties; *Centranthus*, *Chelone*, *Gimicifiga racemosa*, *Cereopsis lanceolata*, *Dictamnus*, *Echinops*, *Epilobium*, *Epimedium*, *Erigeron* (*Stenactis*), *Erodium*, of sorts; *Eryngium*, in variety; perennial *Gaillardias*, *Galega* varieties, *Gaura*, *Gypsophila paniculata*, and others; *Harpallium rigidum*, and most of the other perennial Sunflowers; *Helenium*, *Hebeborus*, in variety; *Hemerocallis*, *Hypericum*, *Iris*, all the so-called German and the rhizome-forming varieties; *Liatris*, *Lindulphia spectabilis*, *Lithospermum prostratum*, *Lysimachia clethroides*, *Lythrum*, the *Bergamots* (*Monarda*), early Forget-me-not (*Onthalodius verna*), *Pentstemon glaber* and varieties, *Phyllis capensis*, *Platycodon* or *Wahlenbergia*, *Platanago* *Larpetice*, *Polygonum sachalinense* and *P. cuspidatum*; *Primula cortusoides*, and *P. acutilis*, *Ranunculus acris*, fl. pl., and others; *Scabiosa caucasica*, *Succisa Doronicum* (*Monarda*), early *Sidalcea* (*Melva*) *candida*, the handsome *Stokesia carynea*, *Thalictrum*, *Tropeolum polyphyllum* and *T. speciosum*, *Tussilago farfara* and *T. fragrans*; and lastly, the brilliant half-shrubby *Zauschneria californica*.

The tuberous and bulbous plants usually found in bulb catalogues I have omitted, but many of these may be increased by division of the bulb or corm, especially the *Glaucolius*, taking care to secure a growth-bud to each portion; while the little bulbils

common to this genus found at the base of the corm are a ready means of increasing the variety, though unfortunately some of the finest varieties produce these very sparingly. *Experience*.

(To be continued.)

PLANT NOTES.

AMASONIA FUNICEA, Vahl, Verbenaceae.

This plant is a most charming decorative subject; its inflorescence being of a shining red, and the plant generally of elegant habit. It is not regular in its flowering period, but it blooms generally in winter. Like *Euphorbia* (*Poinsettia*) *pulcherrima* and *Bougainvilleas*, the floral effect of *Amasonia punicea* is due to its bracts. These are opposite upon an inflorescence often exceeding 18 inches, an elegant curve in this greatly enhances the beauty.

A. punicea is of erect habit, unbranched, and attains a height of 3 feet. Stem at the base half-an-inch in diameter, tapering towards the top. Leaves, 7 to 8 inches long, opposite elliptic-lanceolate, with an entire margin; they are of a very soft dark green velvet above. The veins are very prominent beneath, and correspondingly impressed on the upper surface. Towards the inflorescence the leaves decrease in size, and gradually from their green colour change into an intense red, producing a marvellous contrast to the dark green foliage, and rendering the plant invaluable for table-decoration. The bracts last in perfection fully two months. The flowers develop from the axils of the bracts; they consist of a red calyx and a tubular corolla about an inch long, and of a creamy-white. The plant requires stove treatment and frequent syringings, as it is liable to red-spider and other insects pests. Propagation is somewhat slow, but I found it to strike in almost any light soil if sufficient heat is given. To obtain good cuttings, the plants should be cut down after flowering, leaving a few healthy leaves. A compost of loam, peat, and sand would suit it well; and when the bracts begin to develop a little liquid-manure should be given. During a stay of some years in England, I never remarked a plant. *Erich B. Belmick, Berlin*. [It is well known here. Ed.]

NOTES ON THE NARCISSEUS.

(Continued from p. 126.)

OUT-DOOR CULTIVATION: SOILS.—The *Narcissus* is an accommodating plant, and we seldom hear of its absolute failure in any locality, though it is now widely grown by both professional and amateur gardeners throughout England, Scotland, and Ireland. Post-lands, heavy, ill-drained clays, and very dry sands present adverse but not insuperable conditions, while the alluvial deposits known as warp, wash, drift, &c., are the ideal *Daffodil* soils. The very finest English-grown flowers of which I have had knowledge, come from Caister, near Great Yarmouth, where the alluvium brought down to the coast by the Norfolk and Suffolk rivers is 20 feet deep or more, always moist without being water-logged, and full of plant-foods, which can be brought up *ad libitum* to replenish the upper strata. Here, that most difficult subject, *N. cerneus* fl. pl. increases readily, and poeticus potiarum, another test-plant, which will scarcely grow in poor, dry soils, almost equals *Empress* in vigour and size of bulb. Magnificent flowers are also grown at Chilwell, in the silt of the Trent valley, and the market-garden settlements in the Thames Valley, fill Covent Garden with excellent *Daffodils*. The next best soils are sandy loams resting on moist rock. I have in mind a sheltered garden of this character, near Horsham in Sussex, where the white trumpets, and, *à fortiori*, all other *Daffodils*, are entirely happy. Stiff clays can be much ameliorated, in the case of amateurs who have manageable areas to deal with, by the incorporation of road-girt, leaf-mould, and especially charred earth and bonfire stuff. Drought is the worst enemy of the *Narcissus*, and the most hopeless to combat. The perfection reached

by *Daffodils* in the south of Ireland and the Scilly Islands is due not only to excellent soils but to abundant atmospheric moisture. The lack of this on the upland country between Hauts and Wilts, where the average yearly rainfall is very light, constitutes my own chief difficulty, and my chief desideratum is always a wet February and March.

Manuring.—The common assertion that *Daffodils* resent manure is true only in a very limited sense. Crude stable-manure in actual contact with the bulbs, especially on retentive soils, is certainly injurious; but an analysis of the *Narcissus* plant shows that it needs large supplies of phosphates and potash, and must receive these from without if not abundantly present in the soil. It is the store of these constituents, to a not readily exhaustible depth, in alluvium, that renders it the best staple for the *Narcissus*. Nevertheless, the large market-growers of old blooms in the Thames Valley give their already excellent ground an enormous annual supplement of London stable-manure. Probably the absolutely best routine for all but the more delicate *Narcissis* is to let a nitrogen-loving crop first occupy a freshly-manured plot; the succeeding plantation of *Daffodils* will find ample food in the residue. My own custom is to manure and crop a plot with early Potatoes every year; this leaves the ground in the best condition of heart and tilth, and vacant at the right season for planting the bulbs. Where I am forced to grow *Daffodils* year after year on the same ground, I top-dress the beds in January or February with pure dissolved bones at the rate of 1½ oz. to the square yard. The same quantity of raw bone-meal, dug in at the time of planting, is of service if the ground seems poor. On very sandy soils a small quantity of kainit, or potash in some form, may be added. Charred earth and bonfire ashes also supply potash, and may quite safely be largely dug into beds containing sickly *Narcissis* or delicate varieties. These remarks refer, of course, to bulbs planted in their own separate quarters; clumps among herbaceous plants can only share in the top-dressing which the borders may receive; but if within the reach of hungry roots, they should occasionally be helped by a little artificial manure from the surface. The white Trumpets, *pallidus precox*, and most of the imported wild Trumpets, thrive best in beds of pure loam and leaf-mould, free from stable manure, or in grass. It is noticeable that *N. poeticus* and its hybrids (*N. incomparabilis*, &c.), will assimilate more nitrogen than the Trumpet *Daffodils*, not excepting even the most robust of the latter.

Aspect.—The opinion has been advanced of late that *Daffodils* prefer a shaded situation. This is not generally true, and, if it were, would be unfortunate for the large market-growers, who must necessarily grow them in large breadths in the open field. As wild plants, *N. pseudo-Narcissus*, in nearly all its varieties, and *N. poeticus*, are found on mountain pastures in the fullest exposure to air and sun, and nearly all our garden *Daffodils* fall under the head of these two species and their hybrids. *Pallidus precox* is said to grow best in shady thickets, and *N. triandrus* to prefer a northern aspect. With these, and possibly a very few other exceptions, for the production of fine and abundant flowers, there can scarcely be too much sun where there is no lack of root-moistures. And hard, well-ripened, fibrous bulbs cannot be obtained by less than the whole of the sunlight which our climate affords. Rows of fruit-trees give a wind-break in bleak districts, and their slight shade may check evaporation in a hot, dry spring, but they should be far enough away from their roots not to starve the bulbs. *Daffodils* with much red colouring in the corona are speedily bleached under full sun; but to enjoy the beauty of such kinds they should be cut in bud, and expanded in water. The double white *poeticus* presents a difficulty, as it produces a large percentage of blind scapes unless supplied with abundant moisture in air and at root during its whole time of active growth. It is really at home only in cool districts with heavy annual rainfall, or elsewhere only in wet seasons, and I have proved that planting it in shade results only in much leaf and scanty bloom. *G. H. English, cart.*

Erismia.—P. 125, for *amicus*, read *cerneus*.

PICEA OMORICA (THE SERVIAN SPRUCE).

This, the latest discovered of the European Spruces, was figured in the *Gardeners' Chronicle* for March 8, 1884, p. 309, but at that time it had not been introduced into this country. Even now specimens, except

of small size, are rare, but this need not be the case much longer, for the species is now in commerce. There is a group of trees in the pinetum at Kew which were raised from seed sent from Belgrade eight or ten years ago, and which are now large enough to give some indication of its probable value in gardens. It may at once be said that few of the

Spruces thrive in the indifferent soil and atmosphere at Kew so well as this one promises to do. The trees are now 6 to 8 feet high, of symmetrical outline, and well furnished with foliage to the ground. The leading shoots made in 1896 are from 12 to 18 inches long, so it is evidently a rapidly-growing plant. The leaves are about three-quarters of an inch long, not so distinctly four-sided as most of the Spruces, and they have two glaucous lines on the upper side—that is, the side towards the growing point of the shoot. The wood is furnished with short, black hairs. The species is a native of the mountains of Servia, Bosnia, and Montenegro, and its existence was first made known to science by Dr. Pancice, who described it as equalling any of the European Spruces in stature. When it was first discovered it was thought by some authorities to be merely a form of *P. orientalis*. It may bear some resemblance to that species when very young, its leaves being then much smaller, but plants of the size of those at Kew are unmistakably distinct. *P. ajanensis* appears to be its nearest ally. *W. J. B.*

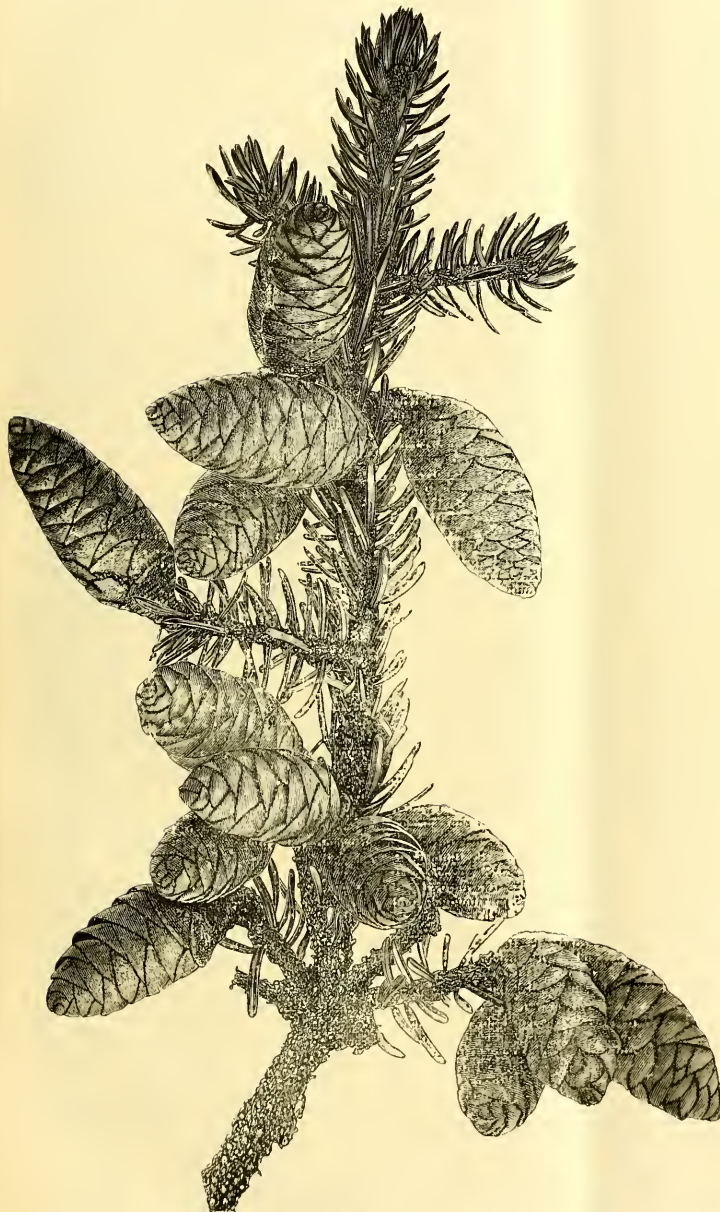


Fig. 14.—PICEA OMORICA, THE SERVIAN SPRUCE.
(Natural size, from a photograph.)

THE BULB GARDEN.

THE CULTIVATION OF DAFFODILS IN POTS.

IN my note on this subject in the *Gardeners' Chronicle* for February 13, p. 105, I appear to recommend the typical *Narcissus poeticus* as adapted for forcing, whereas it is, of all *Narcissus*, the least suited to the purpose. Indeed, it may with truth be stated that the old pheasant-eye *Narcissus* abhors artificial heat, and when perchance a stray bulb finds its way into another batch this is clearly shown. The same remark applies also to the true Lent Lily, *N. pseudo-narcissus*, and to the twin-flowered *N. biflorus*. Of the latter I had for a year or two a few bulbs mixed with one of the larger lots, yet, notwithstanding they possessed plenty of roots prior to being forced, they were uninfluenced by heat, and when early in March the other kinds were turned out again, this one, *N. biflorus*, would be only just on the move, and generally would flower scarcely a day earlier than the bulbs which had remained in the open ground throughout the winter. The reason why some species thus refuse to grow and flower when forced I do not know. *J.*

KEW NOTES.

SAXIFRAGA APICULATA.—Some fine tufts of this early created species are now beginning their season of flowering at Kew, inasmuch as large examples are prone to a long continued season of bloom. This species, which has numerous synonyms, some of which are erroneous, is one of the best, as well as the freest flowering among the earliest flowering species. It is a free grower, and with care may soon be grown into handsome tufts 1 foot or more in diameter. The plant can be increased by pulling it carefully to pieces, and re-planting these pieces somewhat deeper than previously in a fairly moist spot in sandy soil. Most of these will strike root. The idea that *Saxifragas* prefer a very dry position has no foundation in fact, and many plants are lost when so planted; whilst others are lost after dividing the tufts by being planted insufficiently firm and deep. The flowers of *S. apiculata* are of clear primrose-yellow, and they appear in great profusion throughout the spring.

ADONIS AMURENSIS.

Plants of this new and interesting species are to be seen at the present time in flower, the finest growing in a somewhat protected nook in the rock garden, and further screened from rough weather by a piece of glass being put over them. It is a native of Manchuria, and, judging by the specimens now in flower, promises to surpass the few known members of the genus. The flowers are of a golden-yellow tint, and situated at the summit of the erect growths. The latter are vigorous, whilst as yet they are not fully developed. It is among the earliest February flower-

ing plants, the first blossoms appearing early in the month, and much before the well-known *Adonis vernalis*. It is probable that *A. amurensis* will succeed in a deep, light, sandy loam, its cultivation giving but little trouble; in stiff clay soils, on the contrary, the plant never appears to be quite a success.

SNOWDROFS

about in all parts of the grounds as groups and colonies, imparting very pretty effects. But it is in the rockery garden that the choicer species find a place. Here were remarked *Galanthus Alleni*, in vigorous examples; *G. Ikarie*, with broad, handsome, and slightly recurving leaves, and short and sturdy flowers. This fine species is being established in quantity in the upper parts of the rock garden, and another year it will be seen in increased vigour. Others consist of *G. Elwesii*, *latifolius*, *imperiati*, and *caucasicus*. *J.*

THE WEEK'S WORK.

FRUITS UNDER GLASS.

By F. HARAS, Gardener, Easton Castle, Leburg.

The Early Peach-house.—The fruit on the trees in this house, now swelling fast, should be thinned for the last time, removing, if the set is a good one, the deformed, and those hanging in positions where they will not come of good colour. If first-class fruits are looked for, one fruit to one square foot of superficial area, and one fruit on a shoot should be left; although, when the set has been light, I have often left two fruits, which have swelled up all right—still, it is not a practice to recommend in general. It is also essential to the attaining of high colour in the fruits to elevate each by means of a short piece of lath inserted between the branches on either side, thereby enabling the fruit to get all the sunlight possible. As the trees will now begin to feel more severely the calls made on their energies, manurial aids will be valuable, and I know of nothing that is so beneficial at this stage than fish manure sprinkled on the borders, and carried down to the roots by a good application of warm water. The only fault to be found with this sort of manure is its unpleasant odour, but this passes off in a few days. Keep the syringe well at work to prevent red spider getting a foothold, and to clear away aphids. If this be done, and excessive heat in the pipes avoided, these, the greatest enemies of Peach-trees, may be certainly kept greatly in check. Avoid crowding the trees with more young shoots than are required, and stop, at the first leaf from the base, all lateral shoots not required as bearing shoots another year.

Succession Peach-houses.—These trees which were started at the New Year having set their blossom will now require to be disbudded. If aphids are noticed, fumigate the trees without the least delay, eradication being easier now than when the leaves become curled, affording two light fumigations in preference to one that is heavy. In disbudding, take the superfluous top and bottom shoots first, leaving the lowest shoot at the side of the bearing shoot of this year for next year's fruiting; and, instead of removing most of the shoots entirely, and thereby giving the trees a check, pinch out the points of some of them, thus leaving two or three joints on each to help furnish the tree with foliage, and as the shoots intended to remain grow, these pinched shoots may be altogether removed, but leaving them where there are fruits, so that they may attract sap to the fruits. As soon as ever a shoot is long enough to be tied to the trellis, all those which are to furnish the tree should be tied or "holed-in" at the base. Any extra strong shoots should have the points nipped out. Avoid draughts, the air in March being often keen and cold, although the sun may be shining. Affording air in large amount is often the cause of mildew appearing. As the sun continues to increase in power watch the temperature carefully, and do not allow it to rise above 55° at any time, this being, in my opinion, one of the causes of fruit dropping.

The Later Peach-houses.—Peach-trees now in flower require to be kept rather dry as regards the air of the house, but it must not be still air; and do not let the houses get arid, but sprinkle the paths and borders twice or thrice daily in very fine weather. Artificial fertilisation is not so imperative as earlier in the year, but it is an assistance to the large-flowered

varieties if pollen from the small-flowered varieties be applied to them by means of a camel-hair pencil. The latest house of all should be kept as cold as possible, and in spite of so doing, I fear the mild weather will cause the trees to start into growth. Keep windows and doors wide open day and night, unless sharp frosts or very cold winds should occur, and the flowers have begun to open.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower, Burford, Dorset.

Aërides.—During the next few months the Orchid-grower will be extremely busy in consequence of the potting, watering, damping-down, shading, and attention to ventilation, which will be necessary. At the present time many species are sufficiently advanced in growth or root-activity to admit of being repotted or top-dressed. Such East Indian-house plants as *Aërides* and *Scaccolabium* show by their roots turning green at the points that they have commenced to grow. These tender roots grow rapidly, and are easily injured, and no time should be lost in effecting what is needful to unsatisfactory plants. Any specimens that have lost a number of their lowermost leaves, and show much bare stem, should be carefully turned out of their pots, then cut off so much of the base of the stem that when the plant is transferred to the new pot the basal leaves will be just above or on a level with the rim. Fill in around the stem with clean crocks to about one-half the depth of the pot, and re-plant as many of the old roots as possible, working in amongst them equal parts of fresh sphagnum-moss and crocks up to the rim of the pot, and afterwards living moss well up to the base of the leaves. Plants that are healthy require to have the old moss carefully picked out, and to be re-surfaced with the same in a fresh living state. Shade the disturbed plants from strong sunshines, and afford one thorough watering, which will enable to keep the roots inside the pots moist for a considerable length of time. In a few days, when the sphagnum-moss on the surface appears dry, give only a slight sprinkling of water, sufficient to keep the moss growing. Pinch off any flower-spikes that may appear on those plants that have recently been repotted, and wait until the plants have become re-established before allowing them to bloom. All of the following *Aërides* are well worth growing:—*A. Lawrenceæ*, *A. L. v. Sanderiana*, *A. Lindleyana*, *A. Lobbi*, *A. Houlettiana*, *A. Godefroyæ*, *A. Fildiozi*, *A. expansum*, *A. falcatum*, *A. affine*, *A. Larpenæ*, *A. odoratum*, *A. susvissimum*, *A. quinquevulvatum*, *A. virens*, *A. crispum*, *A. crassifolium*, and *A. Savaganum*. The terete-leaved *A. vandurum* (cylindrical), a singular species, is now showing its flower-spikes, and must not be disturbed at the root. Unlike the other species, it thrives best when fastened to upright teak rods, to which the small aerial roots cling tenaciously. During the growing season syringe the plant overhead several times a day, and afford similar treatment to *A. rotundifolium* and *Sarcocanthus filiformis*. The dwarf-growing and sweetly-scented *Aërides japonicum*, from the hills districts in Japan, should be grown in shallow teak-work baskets. The intermediate-house is the best place for it in winter, and in summer it may be removed to the warmest end of the cool house.

Scaccolabium.—Such species as *S. Blumei*, *S. reticulatum*, *S. promorsum*, *S. collettei*, *S. speciosum*, *S. richardsonii*, *S. giganteum*, and the dwarf-growing *S. ampullaceum*, *miniatum*, and *S. curvifolium* should be suspended in baskets near to the roof in the hottest part of the house during their season of growth. The small-growing *S. Heudersoniana* is a little gem, and has spikes with bright rose-coloured flowers. It should be suspended to the roof in small pans or baskets, and requires little shade at any time.

Angreecium and Vandas.—The winter-flowering variety of *Angreecium sesquipedale* is now commencing to emit new roots, and, if required, it should be repotted or top-dressed, as recommended for *Aërides*. The spring-flowering variety should not be disturbed until after the flowers fade. The "fish-bone" *Angreecium pertusum*, which is now in bloom, should be treated similarly. *Vanda Gutchiana*, which is also in bloom, will be luxuriantly if fixed to the exterior of a long teak rod cylinder, and placed in the highest temperature available. It requires an abundance of moisture at all times. *Vanda Amestiana* and *V. Kimballiana* have already commenced to grow, and if more root space is needed it should be given them at once. Upright teak cylinders or baskets are preferable to pots, as they allow plenty of air to circulate amongst the roots. Sphagnum-moss, with a few pieces

of crock intermixed with it, are all that is necessary for them to root in. Select the lightest and most airy position available in the intermediate-house, choosing a spot distant from the hot-water pipes. Abundance of water is necessary throughout the growing season.

Other Species.—Immediately such species as *Spathoglottis Regnierii*, *S. Fortunii*, *S. Lobbi*, *S. Ericssonii*, *S. Kimballiana*, *S. aurea*, and *S. angustatum*, commence to grow they should be repotted, using a mixture of peat, chopped sphagnum-moss, and coarse silver-sand, with plenty of draining material. The same remarks apply also to *Microstylis bella*, *M. Scottii*, *M. macrochila*, and to *Ipsæa speciosa*. Place them in a shady corner of the East Indian-house, and afford copious waterings until growth is completed.

Shading.—Recently we have found it necessary on several occasions to shade the cool-houses, and to put temporary shading over *Bolles*, *Cypripedium*, *Phalænopsis*, *Angreecium*, and young tender seedlings just starting to grow, and many other tender plants. Orchid-growers cannot be too careful as regards shading, and especially in this the case after the comparatively small autumn and winter now passed; therefore, have all blinds and shadings put in order without delay.

PLANTS UNDER GLASS.

By G. H. MAYCOCK, Gardener, Luton Ho, Luton.

Winter-flowering Carnations.—Cuttings propagated as previously advised will now require to be potted; 3-inch pots are the best for the purpose, and a mixture of three parts good loam which has been previously stacked in a dry shed, one of charred loam, and one of sand will suit them well. Replace the plants when potted in a warm frame, and keep them there till well rooted, and afterwards a cooler temperature will suit them. Some growers prefer to syringe the plants, and others do not. It is a question of locality, and in all cases the grower must determine for himself whether the practice is desirable or not.

Euphorbia jacquiniiflora.—A good batch of plants may now be started to furnish the first supply of blooms. With careful management flowers of this *Euphorbia* may be had all through the winter months. They require a longer season of growth than *Euphorbia (Poinsettia) pulcherrima*. To have good blooms from them after the bulk of the *Chrysanthemum* are over until the end of February or commencement of March, three batches should be obtained, and propagated at intervals of a month. Cuttings readily root if taken off with a heel when about an inch long; or a stock may be acquired by cutting up pieces of the old stems, in lengths of about 1½ inch long—place these in shallow pans in an upright position, using a compost of half leaf-mould and half sand, and remove them to the propagating-house. When three batches are required, the operator should take off a third of the stem each time, the lower buds will then be more matured when the next batch is required. Keep the old plants quite dry at present, but in May they might be started to help furnish a late supply of bloom.

Roses.—The best time to prune Roses growing in a house set apart for their cultivation is the month of November, at which season exhausted soil should be cleared away, and fresh substituted for it. Assuming that this has been done, and the plants are advanced in growth, a thorough watering of the borders, followed by a mulching of rich farmyard-manure, will be of great assistance to them. In order to keep aphides in check, the house should be fumigated occasionally. A suitable temperature at this date is 50° by night, and 55° by day, affording air when the weather is mild and open, but avoiding cold draughts, and giving air in frosty weather.

Fuchsias.—Large, old plants, which were pruned last month, should be shaken out of the old soil, and re-potted in a mixture consisting of loam three-quarters, and leaf-mould one-quarter, used in a fairly coarse state. Train a specimen *Fuchsia* are very effective for conservatory decoration. The *Fuchsia* is easily propagated, by taking shoots, 3 inches long, and plunging in a gentle bottom heat in a frame, and as soon as rooted, potting them, and growing them in warmth till May or June. With care, spring-struck *Fuchsias* will make nice plants of good size in the autumn.

Erica hyemalis and Eparis.—Any plants which are passing out of flower should have the current year's shoots pruned hard back, and be kept cool and quiet, and slightly drier than before. When the young shoots are about 1 inch long, the re-potting of

those plants which need it should be done, and the drainage of every one should be put in good order. The pots used should be well baked and hard, and be very efficiently crocked, a large quantity of small, nicely-broken crocks being placed over the large ones at the bottom of the pots, and above these, pieces of the size of Hazel-nuts. The potting-soil should consist of hard peat and sand, and the potting should be very firmly done. During the summer months place the plants in cold frames, a slight shading being afforded them during the hottest part of the day. The plants require to be afforded water with much judgment, being very sensitive to extremes of either wetness or dryness.

THE FLOWER GARDEN.

By CHARLES HERBIN, Gardener, Droppore, Maidenhead.

Gladiolus.—With a view to obtaining early flower spikes either for cutting or outside decoration, some of the hardest varieties, as G. Brenechleyensis may be planted as soon as the soil is in a condition for working upon. The early flowering G. Colvillei and Colvillei alba (The Bride) should be planted in February or early in March. Another plan is to pot them up early, placing about five corms in large 60-sized pots, and place in a cold-frame, or under glass. If the plants refuse outside until rooted, when they may be taken out of the pots and planted into the borders.

Border Chrysanthemums.—These varieties of the Chrysanthemum flower from late summer to the end of the month of October, and are effective plants wherever they are not dot about in a herbaceous border, either in single or in small groups. Space should also be found for a small collection of them in the reserve garden for cutting purposes, the flowers being especially useful in the autumn. Those gardeners who have to furnish large quantities of flowers for sending long distances at that season will find them extremely valuable. Improved varieties have been introduced during recent years in considerable numbers, and fairly good blooms of the Japanese section may be cut in the months of September and October, and if some or all of the plants can be afforded some slight protection, good flowers may be obtained to the end of the latter month, and sometimes still later in the year. Early spring is a suitable time to propagate these early-flowering varieties, and the mild weather of the past few weeks has caused numerous strong shoots, suitable to make cuttings, to start from the plants in the borders. These shoots, with or without a heel, if stripped of their lower leaves, should be put, to the number of four, round the sides of large 60-pots, filled with a light sandy soil, a small quantity of rough leaf-mould in the bottom being sufficient drainage for the pots. If the cuttings are to be placed in a frame having a mild bottom-heat, and preserved from damping off by affording air daily for a short time, the cuttings will root in about three weeks. If large plants are required, they may be re-potted into 6-inch pots when well rooted without disturbing them. Whether parted or not, the plants should be kept rather close in a cold-frame for a short time after being re-potted or potted-off. If topped once and gradually hardened off, these young plants will be ready to plant out at the end of the month of April. A very floriferous variety is the Pompon Flera, a flower of a deep yellow colour. This variety has the merit of commencing to flower in August, and continuing in bloom more or less until cut down by severe frost. Some other early Pompon varieties are Toreador, bronzy-red, 1½ foot; Canari, pale yellow, 1½ foot; Jaéantha, pink, 2 feet; Précoceité, ruby-red, 2 feet; Frédéric Marmet, bronze-red, 2 feet; Strathneath, rosy-pink, 2 feet; Mrs. Cullingford, white, 2 feet; M. W. Piercy, orange-red, 2½ feet. Of small Japanese varieties flowering principally in September and October, the following are desirable varieties:—Madame G. Desgranges and its yellow spot Mrs. Hawkins; Carrie Denny, amber; Harvest Home, bronzy-red, 3 feet; M. Gustave Gruenerwald, white, 2 feet; Goldmine, golden-bronze, 2 feet; Roi des Précoces, rich dark crimson, 2 feet; Ryceroff Glory, golden-yellow, 3 feet. The old hybrid Pompon, Sœur Mélanie, when planted in a sheltered position is an extremely useful October flowering variety, and the pure white flowers keep fresh in a cut state for a considerable time.

Carnations.—If the plants of the border Carnations have been wintered in cold pits or frames, preparation should now be made for transferring the plants to beds and borders. All plots to be occupied by Carnations, which also includes Piecostes, should be

deeply dug, having previously dressed it with well-rotted manure. Some of the manure should be kept within 4 inches of the surface, and to ensure this being done bastard trenching is advisable. I prefer to layer Carnations early, and transplant direct to the borders in the autumn which is undoubtedly the better method where the soil of the garden is moderately light, and local conditions are not against the well-being of the plants in the winter. In heavy soils, and in gardens that are low and are very damp, it may also be necessary to put the plants under glass during the winter. Glass protection is, however, not without its disadvantages, the plants, in my experience, being then more susceptible to the dreaded "spot" on the leaves, unless the air of the frames can be kept artificially dry during mid-winter. The plants in the beds should be examined, and those which are loosened by frost pressed firmly down, and the soil, when workable, stirred with a Dutch hoe. Seedling Marguerite Carnations should be kept near the glass in a house or pit having a warmth of 45° to 50°. If seed was sown when advised, the seedlings will be ready at this date for pricking-off into other boxes at about 2 inches.

Lobelia cardinalis in store boxes, if the stock is insufficient, may be pulled apart, all these pieces well being of the plants in the winter. In heavy soils, and in gardens that are low and are very damp, it may also be necessary to put the plants under glass during the winter. Glass protection is, however, not without its disadvantages, the plants, in my experience, being then more susceptible to the dreaded "spot" on the leaves, unless the air of the frames can be kept artificially dry during mid-winter. The plants in the beds should be examined, and those which are loosened by frost pressed firmly down, and the soil, when workable, stirred with a Dutch hoe. Seedling Marguerite Carnations should be kept near the glass in a house or pit having a warmth of 45° to 50°. If seed was sown when advised, the seedlings will be ready at this date for pricking-off into other boxes at about 2 inches.

Calceolarias, Pentstemons, and Gazanias, which were struck in the autumn, and have been wintered in cold frames, ought now to have full exposure, excepting when frost prevails; pinching the points of the leading shoots to induce bushiness.

Hints on Work in General.—Gravel paths will have been loosened by frost, and will be the better for a good rolling when dry on the surface. The re-gravelling of dirty paths should be finished off within the next two or three weeks. Box edgings may now be lifted and re-laid or mended; and if the walks require gravelling, the edgings should first be re-laid. Lawns should be swept, and moss, plantain, and weeds generally raked off or spudded out, and the holes caused by the extraction of the roots filled with leamy soil. A surface dressing of fine soil, wood-ashes, and soot, in mixture, if applied at this season, will encourage the growth of the finer grasses and Clovers, to the exclusion of moss and weeds generally.

THE KITCHEN GARDEN.

By W. POPE, Gardener, Highclere Castle, Newbury.

Rhubarb.—In planting new Rhubarb-beds, as the crowns this season are already on the move, no delay should occur. The land should have been heavily manured and deeply trenched early in the winter. Lift as many old roots as are likely to be wanted, dividing them into separate crowns with a sharp spade, the strongest being then selected and planted in rows 3 or 4 feet apart each way, not quite burying the crowns. If seedlings are planted, only those of the most promising colour and size should be selected, and in any case many of the plants are sure to prove worthless.

Turnips.—A small sowing may now be made, preferably on a border with an eastern aspect. In sowing now early the plants will probably root to seed before the roots attain to their full size, and that only a small breadth need be sown, sowings being repeated every ten or fourteen days. Sow the seeds, if fresh, and of good vegetative power, thinly in drills, 15 to 18 inches apart, applying, if possible, a good dressing of wood-ashes at the same time; and as a protection from the attacks of small birds, wet the seeds, and roll them in redlead powder. The best Turnip for early work is Early Milan; still, it will be prudent to sow a pinch of Snowball or Early Six-weeks, which, coming into use a week later, avoids the chance of there being a break in the supply of roots.

Peas.—For affording Peas in the month of July, seed should now be sown in quantity. In some soils these are dry and shallow it may be advisable to make trenches 18 inches deep and wide, and placing a thick layer of rich manure on the bottom of each, and treading it firmly, then returning a portion of the soil, and sowing the seed and covering it with 2 inches of soil. The soil that remains will come in for earthing-up the plants. On good land of a retentive nature, trenches are not

necessary for Peas. Tall varieties must be allowed a space of from 5 to 6 feet between the rows, but a better method is to sow in rows 12 feet apart, and crop between with Turnips, Cauliflowers, Salad, &c. As soon as the early sowings show above the ground, dust the latter frequently with fresh soot or quicklime as a means of warding off slugs, &c.; earthing-up and staking the plants as soon as they are a few inches higher. Keep a sharp outlook for the sparrows which pick off the tops, protecting accordingly. Peas raised under glass must be kept cool and be properly hardened off before being planted on a warm border. When planting these house-raised Peas, it is the best course to stake them forthwith, and afford some kind of protection on the more exposed side of each row.

Miscellaneous Sowings.—Seed for furnishing the main crop of Brussels Sprouts may be sown soon on a border that is sheltered from harsh winds. This sowing, if not quite so early as that sown under glass, will probably give a better return. If large Sprouts are liked, choose the Aighruth or Strymger's Giant, and for small solid Sprouts nothing is better than May's Northrup Prize, or Sutton's Dwarf Gem, the latter with dwarf stumpy habit of growth. Sow seeds of some good early Cabbage, as Flower of Spring, or Ellam's Early, and a pinch of early and late Cauliflower, all of which are better for being sown in drills 9 inches to 1 foot apart. The first sowing of Radishes may be made on a warm border, sowing the seeds broadcast, and covering them with less than half-an-inch of fine soil. Wood's Early Frame for long roots is a good Radish, as is French Breakfast, if short ones are preferred.

THE HARDY FRUIT GARDEN.

By H. W. WARD, Rayleigh, Essex.

Recently-Planted Trees and Bushes.—In places where the condition of the soil has been so wet as to prevent its being made firm about the roots and stems of transplanted fruit trees and bushes, no time should be lost in treading it pretty firmly over the roots and around the stems when the ground is in a workable condition. Stakes used as supports to staked trees should be better for being sown in the left firm about them at the same time. Afterwards point the soil thus trodden over slightly with a digging-fork, and apply a 2-inch surface-dressing of short dung. In the case of light, shallow land occupying a somewhat high and consequently dry situation in which fruit trees and bushes have been planted, the loosened soil after a short period of dry weather soon becomes too dry for healthy re-acton. Consequently water should be given at the roots, or the growth made will be stunted and unfruitful.

The Training of Pear and Plum Trees on walls having an easterly aspect, as well as Peach and Nectarine trees occupying a like position, should be completed as soon as possible. There can be no doubt that the lack of sufficient moisture in the soil is frequently the primary cause of the stunted appearance and premature decay of many neglected wall-trees. Everything is against wall-trees obtaining naturally sufficient moisture at the roots at any time throughout the year. In addition to the extra drainage which the foundations of the walls afford, the latter prevent the rains—even during a wet season—from penetrating more than a couple of inches deep into the soil over the roots. In the case of a downpour even—rain coming straight down from the clouds—the sloping surface of the borders carries most of the water some feet away from the foot of a wall. Any reader may prove this by digging out the soil to the depth of 7 or 8 inches at 1 or 2 feet from the stems of trees trained against south, east, and west walls at any time in the year. Hence it is that during the greater part of the last quarter of a century I have had the surface of the soil above the roots of my Peach, Nectarine, Apricot, Plum, and Cherry trees prickled over with a tined fork in spring, before the trees had pushed into flower, following this with a surface-dressing of half-rotted manure, and a good soaking of clear water, the watering being repeated as soon as the fruits were set, and several times afterwards, until the crops ripened. Sometimes I have found the first tub of 36 gallons of water insufficient to moisten the soil down to the roots of a Peach or an Apricot tree just before the flowers had begun to open, and so had to repeat the application. This matter should receive attention forthwith.

EDITORIAL NOTICES.

ADVERTISEMENTS should be sent to the PUBLISHER. Letters for Publication, as well as specimens and plants for naming, should be addressed to the EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith. The Editor does not undertake to pay for any contributions, or to return unused communications or illustrations, unless by special arrangement.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	MAR. 8	Annual meeting of the United Horticultural Benevolent Provident Society, at Caledonian Hotel, Adelphi.
TUESDAY,	MAR. 9	
WEDNESDAY,	MAR. 10	Royal Horticultural Societies Committees.
WEDNESDAY,	MAR. 10	Renfrewshire Gardeners meet.
SATURDAY,	MAR. 12	Royal Botanical Society meet.

SALES.

MONDAY,	MAR. 8	Greenhouse Plants, Roses, Herbaceous Plants, Lilies, &c., at Protheroe & Morris' Rooms. Collection of Border Plants, Roses, Shrubs, Lilies, &c., at Stevens' Rooms.
TUESDAY,	MAR. 9	
WEDNESDAY,	MAR. 10	Cannas, Gladioli, Carnations, Anemones, &c.; Imported and Established Orchids, at Protheroe & Morris' Rooms. Japanese Lilies, Continental Plants, Tuberoses, Spireas, Gladioli, and Palm Seeds, at Protheroe & Morris' Rooms. 2500 English, German, and Dutch Roses; Fruit Trees, Border Plants, Shrubs from Holland, Bulbs, &c., at Stevens' Rooms.
THURSDAY,	MAR. 11	
FRIDAY,	MAR. 12	Special Sale of Border Plants, Shrubs, &c., also 30 000 Japanese Lilies for the Trade, &c., at Stevens' Rooms. Orchids from Messrs. F. Santer & Co., at Protheroe & Morris' Rooms. Photographs and Scientific Apparatus, at Stevens' Rooms.

AVERAGE TEMPERATURE for the ensuing week, deduced from Observations of Forty-three years, at Chiswick.—41° 8'.

ACTUAL TEMPERATURES.—

LONDON *March 5:* Max., 49°; Min., 37°.
PROVINCIALS.—*March 5 (6 P.M.):* Max., 44°, Devon Coast; Min., 35°, Sumburgh Head.

A GOOD deal of unnecessary heat has been evolved lately over a simple matter about which some people appear to hold rather lax views, as to the fairness, or otherwise, of competing with the same varieties of fruit in both the dessert, and the culinary, or "kitchen" classes; for example, with such popular varieties as Blenheim Pippin Apple, Beurré Diel Pear, and Victoria Plum. According to our best authority, Blenheim Pippin is highly esteemed, "either for the dessert or culinary purposes;" Beurré Diel is distinctly termed "a dessert Pear of the highest merit;" and Victoria is as distinctly stated to be "a culinary Plum;" yet probably these three varieties are employed more frequently than any others as competing dishes of fruit in both the dessert and the culinary classes. Is it necessary for competitive purposes to have two classes—(1), Dessert; (2), Culinary—of Apples, Pears, and Plums? Most people of any experience will reply in the affirmative; and it is one of the points in horticultural competitions upon which the public look to the Royal Horticultural Society for instruction, and a definite law or rule to guide them. For all that has been said to the contrary, the point is not a difficult one, and a small committee of level-headed experts would quickly settle it in such a manner as to meet the approval of all reasonable people.

The distinction between (1) "dessert," and (2) "culinary," varieties, is only needful for competitive purposes, and it is not necessary to frame a law to meet any other purpose. Gardeners, amateur fruit growers, cooks, and all others interested in the uses of fruit, can determine for themselves how they will use the different varieties of Apples, &c.—in a raw, cooked, or liquid state—according to their tastes, and the purposes they want to serve. That side of the question may be safely left to them by the managers of fruit shows and competitions.

What is required by managers, as well as by competitors, at fruit shows, is a definite list of the varieties of Apples, Pears, and Plums, which shall be classed, for competitive purposes only, as Dessert varieties, or as Culinary varieties. The Royal Horticultural Society has already gone some distance in the right direction in compiling the list of Apples and Pears, for the guidance of exhibitors and others, at the Crystal Palace Fruit Show of the Society, and all that is necessary is the extension of the lists, until they comprise all the Apples, Pears, and Plums usually exhibited under ordinary circumstances. Having taken the trouble to glance through the latest edition of Dr. Hogg's *Fruit Manual*, our chief authority on the classification of Fruits, and particularly of Apples, it may be of interest to show, from the following analysis, how comparatively little remains to be done by the experts of the Royal Horticultural Society to settle which varieties of Apples, Pears, and Plums shall be classed as "dessert" and "culinary." Dr. Hogg describes rather over 700 varieties of Apples, and classifies about 270 as "dessert," 220 as "culinary," 80 as "dessert and culinary," 75 as "cider," and only about 45 are not referred to any class.

Of the eighty or so varieties of Apples classed as "dessert" and "culinary" by Dr. Hogg, a tenth are already dealt with in the lists of "dessert" and "cooking" varieties, compiled by the Royal Horticultural Society, including such varieties as Blenheim Pippin, or "Orange," Duchess of Oldenburg, Emperor Alexander, and Peasgood's Nonsuch, which are all placed in the list of "cooking Apples," Allen's Everlasting, Brownlee's Russet, Pearn's Pippin, and Worcester Pearmain being placed in the "Dessert" Apple list. Such an excellent example for competitive purposes should be carefully followed out, and the remaining popular varieties of Apples, classed by Dr. Hogg as dessert and culinary, put into one or other of the two classes. There should be no difficulty in dealing equitably with such well-known varieties as Golden Pearmain, Gravenstein, Reinette du Canada, and such-like, classed by Dr. Hogg as dessert and culinary.

In classifying the Pears, Dr. Hogg has not been so exact, as he passes about 410 out of about 650 varieties described without any reference to their "dessert" or "culinary" qualities; but with Pears the classification may not be considered so needful for general purposes, although it is imperative for competition. It does, however, class about 170 varieties as "dessert," and undoubtedly most of the varieties not classed are also "dessert;" thirty-two as "culinary" or stewing; and thirty as "perry" Pears.

Out of about 186 Plums described by Dr. Hogg, eighty-four are classed as "dessert;" sixty-four as "culinary;" and only thirty-eight, mostly never seen in competition, are not classed.

It is thus seen that if Dr. Hogg's *Fruit*

Manual, and no better work can be found, is taken as a basis for the classification of Apples, Pears, and Plums into (1) dessert and (2) culinary varieties, the work of classifying them need not be either costly or prolonged; and the authorised lists compiled and published by the Royal Horticultural Society would be a valuable boon to all concerned in the management of fruit shows and fair competition.

The Royal Southampton Horticultural Society.

This popular provincial Society, one of the best-known and most largely patronised in the South of England, now finds itself, after nearly thirty years of active operations, to be in danger of collapse, because it has at present no place in which to hold its exhibitions. Formerly it found ample room for its fine annual shows in Fitznugh Park, close to the town; but eventually the builder ejected them, and a home was secured and maintained at great expense, in Westwood Park, a little further out. That was held on a lease that unfortunately expired last year, and thus the Society finds itself literally without a place in which, at the customary period of the year, it can hold its meeting. Just on the north side of the town is the well-known and beautiful common, some 300 acres in extent, which is in no sense a public park, but which is none the less under the absolute control of the local corporation. For the privilege of boarding in a few acres of this large space, so that the annual show may be there held in August next, the Society has asked permission. That body quotes the fact, that in some other towns, notably at Shrewsbury, similar privileges are granted; and more than once have some of the large peripatetic agricultural societies had the same privilege granted them on Southampton Common, and no one has been injured. These, too, have had some 30 acres enclosed for many weeks, whilst the Society asks for but a few acres, to be enclosed for only a few days. No doubt the corporation fears that applications of this nature may become too frequent, if once the first be granted; but it would be an immense misfortune had the Society no place to hold its shows. Such are the troubles that the grip of the builder inflicts on horticultural societies in and around large towns.

DENDROBIUM DALHOUSIEANUM.—Our illustration, p. 157, exhibits this handsome species in excellent form as grown by Mr. D. G. SKELTON, the gardener at Mount Pleasant, Bishop's Auckland, who kindly furnished a photograph, of which fig. 45 is a reproduction. The species, a native of Burnab, and introduced to Chatsworth in 1837 by GISSON, is now pretty well known in this country. It is a noble-looking plant, evergreen, large flowered, and producing its blossoms in the spring from the leafless stems for several years in succession. The stout, terete, sub-fusiform stems grow from 4 to 8 feet in height, and they are prettily marked with crimson. The sepals and petals are of a tawny yellow with a margin of rose colour. The lip is in the front, whitish, and at the base of a pale yellow tint marked on either side with a large purple blotch, the inner edge of which is furnished with a fringe. Plants have been noted with forty-three blossoms on a stem, and a total number of 430 on a single plant.

ROYAL HORTICULTURAL SOCIETY.—The next Fruit and Floral meeting of the Royal Horticultural Society will be held on Tuesday, March 9, in the Drill Hall, James Street, Westminster, from 1 to 4 P.M. At 3 o'clock a lecture will be delivered by Professor H. MARSHALL WARD, F.R.S., on "Microscopic Gardening."



FIG. 45.—DENDROBIUM DALHOUSIANUM. (SEE P. 156.)

THE ROYAL GARDENERS' ORPHAN FUND.—A meeting of the executive committee was held on Friday, Feb. 26, when W. MARSHALL, Esq., was again elected chairman of the committee. Amongst others the following special receipts were announced. The Chislehurst Gardeners' Mutual Improvement Society's Concert, £23 12s. 6d., a special vote of thanks being accorded; MESSRS. DUNYARD & CO., Maidstone, £5 5s.; Mr. O. THOMAS, Frogmore, £2 2s.; Mr. T. WHILLANS, Blenheim, £2; Isle of Wight Horticultural Society, proceeds of lecture by Mr. H. J. JONES, £1 2s.; Miss NOBLE, Henley, £1; Mr. J. KIRLING, proceeds of skating on Knebworth Lake, 11s. 7d., and several smaller sums. The result of the election was announced, whereby thirteen children are placed on the Fund, and the respective guardians appointed. The mothers in each case undertake the duties.

THE UNITED HORTICULTURAL BENEFIT AND PROVIDENT SOCIETY.—The annual meeting of this estimable gardening society will take place on Monday, March 8, the chair being taken at 8 P.M., by Mr. A. DEAN.

KEWITES: PRESENT AND PAST.—The annual meeting of the Kew Guild was held in the lecture-room at Kew on the 25th ult., when the popular president of the Guild and curator of the Gardens, Mr. GEO. NICHOLSON, occupied the chair. The report of the committee, though giving rise to considerable discussion, was upon the whole a most satisfactory one, and it was passed by acclamation. The Guild has now a sum of £10 invested, and a balance besides. All the members of the committee were re-elected, and additional ones to represent Kewites abroad and in the Colonies were appointed. Mr. J. ATKMAN retires from the secretaryship, with the thanks of the Guild, and the office will in future be combined with that of the editor of the *Journal*. Two auditors were also appointed. It was suggested by several members that as soon as the committee could see its way to the publication quarterly of a modified edition of the *Journal*, the members of the Guild would be glad to welcome it. If the association continues to give effect to the vitality it possesses, it will undoubtedly be of increasing interest and service to all gardeners who have passed through Kew, and to national horticulture. We desire to urge any past Kewites who have not yet closely identified themselves with the movement, to do so at once. Communications should be addressed to the editor of the *Journal*, Mr. W. WATSON.

THE SURVEYORS' INSTITUTION.—The next ordinary general meeting will be held on Monday, March 8, 1897, when a paper will be read by the Right Hon. HORACE C. PLUNKETT, M.P., on "Agricultural Co-operation;" the chair to be taken at 8 o'clock. The third of four meetings of examinees and students authorised (subject to certain conditions) by the council to be held during the present session, will take place in the first floor room of the temporary premises, Savoy Street, W.C., on Monday, March 15, at 7 P.M., when a paper will be read by Mr. R. ST. J. MATHEWS on the "Honing of the Working Classes." All inquiries with reference to the Junior Meetings should be addressed to Mr. A. NORMAN GARRARD, 8, Frederick's Place, Old Jewry, E.C.

COMING EXHIBITIONS.—Of the horticultural display that will be made in the United Kingdom during the present year, that of the—

SHROPSHIRE HORTICULTURAL SOCIETY, which will take place at Shrewsbury on August 18 and 19, will be one of the most important. The committee has announced its intention to make the exhibition commemorative of the sixtieth year of HER MAJESTY'S reign. In order to make it successful in this respect, the presence and co-operation of the Royal Horticultural Society has been asked, and as most of the readers of this journal are aware, the request has been cordially accepted. The schedule issued by the Shropshire Society is before us, and from this we observe that a sum approaching £900 is offered in cash prizes in the Society's schedules for the year. The list of silver medals, cups, and extra awards is also a very

long one, and includes two specially designed Victorian medals offered by the president of the Society, a Veitch Memorial Medal, the gold medal of the Worshipful Company of Fruiteers, a gold Bauksian medal of the Royal Horticultural Society for the exhibit (non-competitive) which best represents the progress of horticulture during the last sixty years. Some of the principal classes that are likely to create features at the Show are the following:—A group of miscellaneous plants upon a space of 450 square feet, the 1st prize for which is £35, and the others proportionately large. Then we notice the 2nd class for a group of ornamental foliage plants, Palms, Ferns, &c., to be arranged upon a space of 250 square feet. The 1st prize for this is £25. Artistic arrangement in the above classes will be chief point in the competition. The liberal prize of £25 is offered for the best collection of twenty stove and greenhouse plants, and for lesser collections of similar plants the prizes are as tempting. As an encouragement to the exhibition of new plants, the Society offers a Gold Medal for the most meritorious flowering or foliage plant not in commerce before January 1, 1897. Turning to the cut-flower department, the most important class in this section is that for a display of floral arrangements, for which three prizes amounting to £37 are offered. Most of the flowers in season will be exhibited in special classes.

The Decorative Desert Table will undoubtedly create much interest among fruit growers (and fruit eaters). For the particulars of this competition the reader must turn to the schedule, but we may add that the 1st prize for this valuable feature of the fruit classes will consist of a Veitch Memorial Medal and £5, presented by the Veitch Memorial Trustees, and 12 guineas given by the Society.

The Victorian Fruit Class should be of even greater interest. It calls for 60 dishes of fruit, tastefully exhibited with cut flowers, &c. The winner of the 1st prize will obtain the Gold Medal of the Fruiteers' Company and £30. We must omit to mention other classes in this schedule, including the vegetables. Enough has been said to show that the Shropshire Horticultural Society is flourishing and enterprising.

WOLVERHAMPTON FLORAL FETE.—Encouraged by the success that has hitherto attended the horticultural exhibition that now takes place annually in the West Park, Wolverhampton, the committee has again issued a catalogue of classes that indicates continued and increased vitality. The next exhibition will be held on July 13, 14, and 15, and we notice that seven of the classes are described as international ones. Among these are classes for sixteen stove and greenhouse plants, for a group of plants arranged for effect upon a space of 450 feet, for eight exotic Orchids, and others for Palms, fine foliage plants, and Ferns. In the two first classes the prizes amount to £95. There are a number of Rose classes, including one for seventy-two distinct varieties. As usual, there are numerous classes arranged for cut blooms of different species, this being a section that usually is a marked feature of the Wolverhampton exhibitions. Fruit and vegetables are fairly well represented, especially remembering the date at which the show is held. Some of the classes in all sections are reserved to gentlemen's gardeners, others to amateurs, and there are considerable inducements held out to cottager exhibitors. Altogether there are 114 classes, and a good display may be looked for.

COUNTY BOROUGH OF HANLEY HORTICULTURAL FETE.—It has been determined to obtain in Hanley what has already been inaugurated in other populous districts, viz., a Horticultural Fete. Of what is known as the Staffordshire Potteries, the county borough of Hanley occupies a central position, and is, therefore, in the midst of a very large populace. The schedule that has just been issued by the committee is a bold one, and if other established societies are not sufficient for the horticultural exhibitors' time and resources, the Hanley exhibition, to be held on July 7 and 8, will be a success. The schedule embraces five divisions, including open classes, gentlemen's gardeners',

or amateurs' classes, local classes, cottagers' classes and one for the best kept greenhouse in the county borough of Hanley. The cottagers' section is very limited, and in proportion to the open classes, we think they should have been trebled at least. It is amongst such cultivators that the greatest opportunity exists for a society like this to do good. In all there are seventy-nine classes, and the prizes offered are equal in some instances to those offered by societies that have existed for years and are widely known. Many of the classes are interesting ones: an instance may be given of that for a group of Orchids in bloom arranged for effect, with the optional use of Ferns, upon a space not exceeding 100 square feet.

BARON SCHRODER'S ORCHIDS.—We are informed that the QUEEN, the EMPRESS FREDERICK, and the PRINCESS BEATRICE, visited Baron and Baroness SCHRODER at Egham on March 2, and were highly delighted with the Orchids shown them by the Baron and his gardener.

DISASTROUS GALE IN WEST OF ENGLAND.—On Wednesday morning last (writes Mr. A. Hope), between 7 and 8 o'clock, a fierce gale of wind blew across the county of Devon for about an hour, uprooting trees, tearing off roofs of houses, and stripping gardens in all directions. The damage to timber around Exeter is very considerable. Powderham Park, Nutwell Court, and other well-known seats have suffered much damage, many fine trees having fallen. The old nurseries of LUCOME, PINCE & CO., now the Exeter Nurseries (Messrs. SCLATER BROTHERS), have suffered to the extent of over a thousand pounds, the large Camellia-house being completely wrecked, with other houses near it. On the Streatham Hall property over sixty fine trees have succumbed, and in Northernhay and the other pleasure-grounds of Exeter, Elms of 100 and 200 years old have been uprooted in large numbers. Messrs. VEITCH have suffered also, but not to any great extent, although so fierce was the gale that frame-lights were in some instances carried many yards from their places, and, of course, smashed to pieces.

MARRIAGE OF MR. GEO. MONRO, JUN.—On Tuesday, the 2nd inst., Mr. GEO. MONRO, the second son of Mr. GEO. MONRO, of Covent Garden, was married to HELENA, daughter of EDWARD GLIVEN, Esq., of Haverstock Hill. The ceremony took place at the Haverstock Congregational Church, where, it may be stated, Mr. E. G. MONRO, the eldest son, was married a month ago to a daughter of T. GRINSEY RANDALL, Esq., England Lane, N.W. As on the former occasion, the chapel was crowded with invited guests and others, and was profusely decorated with flowers. A similar reception was again held at the Vestry Hall, Hampstead. The happy couple afterwards left for St. Leonards-on-Sea, and many of the guests proceeded to view the handsome presents that were on view at 96, Haverstock Hill, the residence of the parents of the bridegroom. In celebration of the double event, Mr. MONRO'S employes of all grades were invited to dinner at Simpson's, Strand, on Saturday, the 27th ult., when there were about sixty persons present.

"ARBOR-DAY" AT EYNSFORD, KENT.—In the quiet little village of Eynsford, in Kent, there took place on Saturday, the 27th ult., the first celebration of an "Arbor-day." The inauguration of similar institutions in all parts of the country is a step which Mr. RUDOLPH COOKE, M.P. for Hereford, has recommended as a means to excite the interest of country people in the question of cider manufacture, and to induce them to plant vintage trees of the best kinds of Apples for this purpose. Though our American cousins may be excused for viewing with humour the commencement of "Arbor-day" celebrations in a country so populated as our own little island, if it proves helpful in drawing attention to the necessity of replanting most of our old orchards, and giving increased attention thereto, it will justify its existence. The cider industry is deserving of encouragement from horticulturists and all who desire to see our available land made more valuable for cultivation. The first "Arbor-day" passed off successfully, and this was

due in a large measure to Mr. TILL, of Eynsford, who was the chief promoter. At a meeting held under the presidency of Sir GEO. BIRDWOOD, K.C.I.E., &c., a resolution was passed urging the Government to appoint a commission to enquire into the condition of English orchards.

"A DIRECTORY OF TITLED PERSONS FOR THE YEAR 1897."—This little volume is intended as a supplement to *Hibbeler's Almanack*. It contains a history of the monarchy and of the peerage, with full details of the Royal family, and with an account of the Queen's coronation—sixty years ago. They follow in one continuous alphabetical sequence a list of peers, baronets, knights, privy councillors, dowagers, bishops, and of everyone with a recognised title. A great amount of labour and care has obviously been expended on this volume, which, from the facility of reference which it offers, and its completeness, will be most useful.

FRUIT-CANNER.—According to the *English Mechanic* of February 19, 1897, a patent has been granted in the United States to A. C. McCUTCHEON, of Sparta, Mich., for an improvement in canning fruit. Instead of cooking the fruit before canning, the fruit is first put in the cans, and the latter are placed in a specially-designed steamer, whereby the fruit may be cooked by steam, retaining more perfectly its full flavour and colour. The body of the steamer is placed in a boiler-pan adapted to be set on a stove, and a short distance above the water is a perforated diaphragm on which cans may be set, there being another perforated diaphragm a short distance higher up within the casing, on which cans may be set, and to which steam is supplied by a central pipe and branch pipes, maintaining an equal heat in the upper and lower sections.

WILD BIRD PROTECTION AND NESTING-BOXES.—Mr. J. R. B. MASEFIELD is about to publish a work on this subject. The object of this book is to furnish reliable particulars of the ancient and modern laws relating to wild bird protection, including orders obtained by county councils for the local protection of wild birds and their eggs, and to give full particulars and illustrations of artificial bird nesting boxes, ledges, and holes, with instructions how to make and affix them, also figures of various designs of nesting boxes recommended by the Rev. JULIAN TUCK, the author, and others. The book is fully illustrated by nine full-page collotype plates taken from photographs of nesting boxes, &c., in situ, which have been actually used by wild birds. The publishers are TAYLOR BROS., Leeds.

TURRO DAFFODIL AND SPRING FLOWER SHOW.—We learn that owing to the unusual forwardness of Daffodils and other spring flowers this season, the committee of the above have decided to alter the date of the show to March 16 and 17. Notice of entries should be sent not later than Tuesday, the 9th inst., to the Secretary, Tregys, Perranwell, Cornwall, who will supply entry forms on application.

MR. WILLIAM MILNE.—The death of this gardener, in his forty-third year, is announced. After some years of service at Levens Hall, Trentham, and previously at Wimboldis House, he succumbed to softening of the brain and concurrent blindness. He was elected to participate in the benefits of the Gardeners' Royal Benevolent Fund at the last election only. He leaves a widow and four children. Pitiable cases like these emphasise the necessity for our gardening charities, and render imperative the duty of supporting them.

BOTANICAL MAGAZINE.—The March number is particularly interesting. The plants figured are:—*Wittaria chinensis* var. *multijuga*, the *W. multijuga* of Van Houtte's *Plore des Serres*. It resembles chinensis, but it has smaller leaves with a larger number of leaflets, and much longer racemes, and more numerous but smaller flowers, L. 7522; Kew. *Holothrix orthoceras*.—A South African terrestrial Orchid, with radical, sessile ovate tessellate leaves, and erect scape, bearing at the top racemes of white flowers somewhat spirally arranged, as in *Spiranthes*.

The lip is broad, projecting, rather deeply lobed, ending at the base in a long spur, t. 7523; Kew.

Grevillea Hilliana.—An east Australian Proteac with pinnatifid, broadly-lobed leaves, silky on the under surface. The greenish flowers are densely compacted in shortly-stalked, axillary spikes, 5 to 6 inches in length. La Mortola, Comm. F. Hanbury; t. 7524.

Dendrobium sarmentosum.—A Burmese species, with slender stems, ovate leaves, and small white, flatish flowers nearly an inch in diameter. The three-lobed lip scarcely exceeds the segments, the two side lobes are small, erect, yellow with red stripes, the anterior lobe ovate, acute, yellow at the base, t. 7525; Kew.

Didymocarpus malayana.—Hook. f., in *Gardeners' Chronicle*, 1896, li, 123, f. 24.

CHIONOSCILLA ALLENI.—This hybrid between *Chionodoxa sardensis* and *Scilla bifolia*, is in fine flower at Kew. The plant came in some bulbs from Mr. WHITTALL, of Smyrna, and has also been raised artificially.

GERMINATION.—It is currently reported in the text books that the radicle escapes through the micropyle of the seed by virtue of the pressure which it exerts during its growth, and which enables it to force its way through the tissues. The real force seems rather to be a ferment[which is formed in the radicle, and which erodes and dissolves the tissues, and thus enables the radicle to escape.

PUBLICATIONS RECEIVED.—*Ueber den Gartenbau in Russland*, Von Dr. UDO DAMMER, Jahrgang, 1897 (Buxenstein, Friedrichstrasse, 210, Berlin).—*Liste des Conifères cultivées dans le Parc de la Pierre, à Chambéry*, Souvenir de la Visite de la Société Suisse des Forestiers, August 10, 1896. Extrait de l'Herbier Boissierianus (Lausanne, Imprimerie Georges BRIDEL & CIE.)—*Les Fruits et les Légumes aux Halles Centrales de Paris pendant l'année 1895*. Par MM. D. BOIS and G. GIBALT. Reprinted from the *Journal of the Société Nationale d'Horticulture de France*.—*Transactions of the Scottish Horticultural Association*, Constitution and Bye-laws, Syllabus for Session 1897, and Twentieth Annual Report. We are pleased to learn that the past year was a satisfactory one, and that the prospects of the Association for the future seem propitious (Edinburgh: SANSON & Co., Easter Road).—*Fifth Annual Report of the Women's Branch of the Horticultural College, Swanley, Kent*. This association seems to be still flourishing and extending, the report for the past year being in every way favourable.—*The Fruit-growers' (Illustrated) Year-Book*. A useful shilling handbook, addressed to all growing fruit, whether for private consumption or for market. It is edited under the direction of the Earl of WINCHILSEA, and the (London) Office is 30, Fleet Street, E.C.—*The Fruit-growers' Catalogue and Market-senders' Guide*. This serviceable directory is edited by SAMSON MORGAN, author of many agricultural and gardening books. It is especially intended for "market senders, shippers, growers, brokers, retail traders, and salesmen," whose interests are herein specially considered (Horticultural and Agricultural Bureau of Information, Adelaide Street, Charing Cross).—*Transactions of the Royal Scottish Arboricultural Society*, vol. xv., part I. (DOUGLAS & FOLIES, Castle Street, Edinburgh). It is satisfactory to note how flourishing this society continues to be.—*Studies on American Grasses* (U.S. Department of Agriculture, Division of Agrostology; Washington). This bulletin (issued February 6) includes papers on the Genus *Xiphiopsis*, by F. LAMSON-SCHNERER; List of Grasses collected by Dr. E. PALMER near Acapulco, Mexico, by the same contributor; Mexican Grasses collected by E. W. NELSON, by F. LAMSON-SCHNERER and JAREN G. SMITH; American Panicums in the Herbaria at Berlin, by THEO. HOLM; Native and Introduced Species of Hordeum and Agropyron, by F. L. SCHNERER and J. G. SMITH.—*Bulletin of Miscellaneous Information from the Royal Botanic Gardens, Trinidad*. Part I., vol. iii., for January. The contents include papers on *Petrea* (species), the Cocorite Palm, *Pithecolobium Saman*, &c. There is also a note relating to

the decreasing rainfall of Trinidad, which is attributed to the disappearance of the forests. It is at least advisable that this drought be carefully noticed and chronicled, as it may be due to causes which, if taken in time, may be coped with before serious damage is effected.—*Proceedings and Journal of the Agricultural and Horticultural Society of India*. Vol. x., for October-December, 1896 (Calcutta, Metcalf Hall). A satisfactory report of a veteran society still doing good and appreciated work.—*Agricultural Journal of the Cape of Good Hope* (Published by the Department of Agriculture). The fortnightly issue of this publication, dated January 14, contains reports of crops in various districts, and prospects for the future harvests. Stock-farming is included among the subjects treated of. *Erythra*, edited by WILLES LEHN JEFFSON (published in Berkeley, California, in London, and in Germany). The issue for January contains Notes on *Peucedanum erosum*, by the Editor; Notes on the Pollination of Californian Mountain Flowers, by A. J. MERRITT; New West American Fungi, by J. B. ELLIS, and E. M. EVERHAART; Botanical Explorations in California in 1896, &c.—*Report of the Botanist L. R. Jones, of the Vermont Experiment Station*. Reprinted from the Ninth Annual Report.—*Royal Botanic Gardens, Glasnevin, Dublin*. List of seeds for exchange during 1897. A long catalogue including some desirable species.—*Favourite Flowers of Garden and Greenhouse*. By EDWARD STEE, Nos. 26 to 28 of vol. iii. have now been issued, and, like former numbers, are sure to be appreciated by those who like descriptive and cultural notes and attractive coloured plates. (FREDERICK WARNE & Co., Bedford Street, Strand).—*Familiar Wild Flowers*. By F. E. HULME (CASSELL & Co., London, Paris and Melbourne). The First Part of a new edition of this popular work has now appeared. The whole issue will consist of twenty-one parts, price 6d. each.—*Dictionnaire Pratique d'Horticulture et de Jardinage*. The 58th Livraison of this work is continued as far as *Rhipsalis*, half of which genus is therein treated of.

ORCHID NOTES AND GLEANINGS.

CATTLEYA PERCIVALIANA.

DESPITE the fact that on its first introduction some of the best specimens realised over £100 each, *Cattleya Percivaliana* has never been a favourite Orchid; and yet the flower of a good variety is very handsome. An inflorescence of the best form is sent by W. H. LAMSDEN, Esq., Balmiedie, Aberdeen (gr. Mr. G. Roberts). The flowers are as large as those of an ordinary *C. labiata*, the broad sepals and petals of a bright purplish-rose tint; the fully-expanded and crimped lip of a dark reddish-orange at base and centre, the front lobe being of a rich velvety crimson-purple. Few Orchids have displayed such rich colouring or such neatly-furrowed flowers.

ONTOGLOSSUM CRISPUM.

As a rule, the command of high prices pertains to the spotted forms of *O. crispum*, rather than to the fine white varieties; but whenever a really fine example of the latter appears, it commands quite as much admiration as the blotched kinds, and a proportionately good price when sold. One of the best, if not the best, forms of white *O. crispum* which has yet appeared, was put up at auction by Messrs. Protheroe & Morris at their rooms, 67 and 68, Chesapeake, on February 26, when, after a spirited competition, it was purchased by H. T. Pitt, Esq., Rosslyn, Stamford Hill, for 31 guineas. The plant bore a noble inflorescence, the flowers resembling of the *O. c. Duchesi*, which caused a great sensation some years ago; but those of Mr. Pitt's plant are much larger, the substance is firmer, and the flower better in every respect. X.

LYCASTE SKINNERI VAR. TOM LOFFHOUSE.

Among the many varieties of *Lycaste Skinneri* which date from the days of G. Ure Skinner, who used to grow them in one of his rooms at home, there

have been very few of first-rate excellence. Personally, I have never seen one to equal the highly-flamed and beautiful one named Dawson, first flowered in the Meadowbank collection quite thirty-five years ago. Unfortunately, it is not in existence now; one of the more prominent of existing forms is Imperator, similar to which in character is the variety recently in flower at A. Warburton's, Esq., Vine House, Haslingden, Lancashire (gr., Mr. Tom Lofthouse). This variety has fine, broad, oblong-ovate sepals of a bluish ground, with broad, straight, pink lines about equi-distant over their surface. The petals are highly flamed and of good substance, nesting close over the column and half enveloping the lip. The lip is all but pure in colour—far more so than in Imperator. Mr. Warburton's Lycastes are all well grown in an intermediate temperature, this plant having a dozen of strong, roundly-ovate pseudo-bulbs with strong leaves. *J. A.*

GROUP OF PLANTS IN FLOWER OF DENDROBIUM WARDIANUM.

In Mr. Warburton's *Lælia* and *Cattleya*-house, which is a comparatively lofty hip-span, is a splendid set of *Dendrobium Wardianum*, excellently cultivated, and yielding at the time of my visit, 2000 expanded flowers. One plant alone had about 120 flowers. These are suspended above the *Lælia*s. There are no plants exactly alike. One of the most striking ones was of normal form, but had a yellowish-green shade, particularly about the lip, which with the bright crimson eyes contrasted so well. Mr. Lofthouse waters very sparingly even in the growing season, and he has not subjected any plants to the temperature of a cool-house. The result shows that those who starve their plants to get them to set buds or to arrest second growth are in the wrong, and the sooner they follow the practice adopted at Vine House, Haslingden, the better for themselves. *J. A.*

DENDROBIUM DENSIFLORUM.

A very fine example of this species is now in bloom in the collection of Orchids at Greenlands, Hecley-on-Thames. It is a finely-branched example, carrying twenty-three spikes, large, full, and very showy. *R. D.*

MUSTARD FOR WIREWORM.

WHETHER a farmer or a horticulturist he may consider himself a happy man who has not suffered more or less from the ravages of the wireworm. As the latter, I have been fortunate in meeting with a remedy which I believe would also be of great benefit to the farmer. I have something over an acre of garden, mostly new soil. It is no wonder therefore, if my crops have been more than decimated by wireworm.

When sowing some Peas last summer I remembered a remedy which I had used some half century ago in the case of grain crops. It was then the custom to sow Mustard-seed, and plough it in previous to Wheat.

I applied therefore to the housewife, and from a tin of Coleman's mustard-powder, I scattered some over the Peas in the trench for a couple of yards before they were covered up, the result was a very fine crop in this portion, the Peas coming up thickly, and with that dark bluish-leaf which betokened the rich growth that was to follow.

Last summer I also applied this dressing to other crops, especially Onions and Carrots, with marked success. I much appreciate the latter when very young, as does also the wireworm. I usually have five or six sowings to furnish me with tender half-inch roots in due succession, and when I had a difficulty in procuring anything like an even crop, have by a moderate use of my powder no difficulty in securing faultless rows of this delicious vegetable, the roots neatly touching each other.

So also with Beans of various description. In previous years, when tired of waiting for their appearance above ground, I had examined the growth and found the seed burrowed through and through by the wireworms. I now obtain splendid crops without intermission. On one occasion, when raking

over the ground previous to sowing a crop of Sutton's early Marrowfat and Sharpe's Queen, I found so many wireworms that I put a hundred into a cup and dusted freely some mustard-powder over them. In ten minutes they were all dead, pale and motionless. The gardener, who, like most of his class, was a stubborn unbeliever in new remedies, then sowed the two rows, and I dusted half of each row with my powder. He covered in the Peas, and in a few minutes he came after me. "I believe, Sir, there is something in your powder, for the wireworms seem coming up out of the ground." The result was a remarkably fine crop of these Peas. From the first day they appeared above the ground the contrast to the undressed portion of the rows was undeniable. I am this spring dressing every crop in the same way, including early Potatos.

In my flower garden I have hitherto lost 80 per cent. of my bulbs, Carnations, &c., *Gladioli* shoots have in most cases had their shoots pierced through by wireworms. Iris roots also I have found with the inside completely eaten away and the skins alone left, looking with their rootlets like an empty glove. I am now trying the effect of mustard in such cases, and I hope that some of your readers will make experiments in this direction also. A very small quantity of mustard is sufficient, more is dangerous. It must not be supposed that I continue to use "Colman's pure mustard," as at first, now I apply for the coarser description—siftings—called I "mustard-dross." It is remarkable that this commodity after being pressed for the extraction of oil is exported to Holland, &c., for dressing land infested with wireworm. It is possible that my adoption of it is not so unique in this country as I suppose. A small (half-gallon) wicker basket I find the most convenient for dusting the dry mustard-dross with. I may add that it is probable the unexpressed oil in the dross acts as a manure in stimulating the growth of crops, as I have above stated. But I will repeat, the dross must be used carefully—a very little seems to sicken the wireworm—just sufficient dusting to produce a little greyness of colour; dropping it in patches enough to cover the soil seems fatal to everything beneath it, vegetable or animal. When deposited thus thickly, the mustard-dross becomes a grey mould and loses its power. I overdoed Iris roots, the powder turned mouldy, and seemed to have lost its virtue, for I found six vigorous wireworms at one root unaffected by the grey mould close to them. Worms succumb to a slight application, but it seems curious that the dry and scaly wireworm should not better withstand the touch of this dry powder, which seems to pierce the joints of its armour. *J. P.* [The use of mustard in treating land infested by wireworm is advocated by Miss Ormerod in her *Manual of Injurious Insects*. Ed.]

SWEET PEAS.

THE increased popularity of this beautiful annual, which has been so greatly improved during the last decade, has caused me to endeavour to trace its early days, with the actual date of its introduction into this country. It seems that the original variety, with dark purple standards and dull blue keel and wings, first came to us from the Island of Sicily, in the year 1699. Dr. Petiver mentions the fact in a paper he communicated in 1713, to the Royal Society, and which will be found in the *Philosophical Transactions* (see vol. xxviii., p. 210). It seems that the seed was sent to Dr. Uvedale, who was an enthusiast in plants, and had a curious collection of exotics in his garden at Enfield. It was here that the original plants flowered, and they were visited by many experts, including Dr. Plukenet, author of one of the *Herbals* of the day.

Another variety called Painted Lady, with white wings and keel, and a flesh-coloured standard, appears to have been evolved from this original form. Yet some writers of a later date tell us that this latter species came from Ceylon. I can find no reference in any of the books available and published during the next few years, to the Sweet Pea, outside the later editions of Miller, who does not, however, write

anything that is fresh; and the first mention I have been able to trace in a seedsman's list is in that issued by John Mason, who traded at the Orange Tree, 158, Fleet Street, London. His Catalogue, issued in 1800, is a solid little book of 114 pages, and in it he offers black, purple, scarlet, white and painted ladies, new and old. He calls them early annuals, to be sown in open borders from March to May. In 1837 I notice Mr. Carter offers a similar list, with a striped form added; whilst in 1850 he includes "new large-flowered." In 1860 he gives nine varieties and a yellow-flowered one, and also blue-edged, to which the Royal Horticultural Society gave a First-class Certificate many years later. On August 22, 1883, this novelty was first named Blue Hybrid, and it was understood to have been a true hybrid between the annual white Sweet Pea and the perennial Lord Arson's Blue, now almost lost to cultivation. It was the outcome of a series of experiments made with the object of raising a real blue-flowered variety by Col. Trevor Clarke of Daventry. On July 11, 1865, Mr. Stephen Brown of Sudbury gained a similar honour for Scarlet Invincible. From about 1882 to the present time, according to the records of the Royal Horticultural Society, Mr. Eckford has held the field, and he deserves the greatest credit for the high state of perfection to which he has brought this charming species. *Seedsman.*

A GROUP OF LILIUM CANDIDUM.

THE common white Lily, the painter's Lily, is well shown in fig. 46, taken from a photograph kindly sent by Mr. Jeffery, Moor Court Gardens, Cheadle. The accompanying note tells us that last year the bulbs flowered remarkably well in the hot sandy soil of the garden. He had not always been so fortunate, however, in obtaining fine results. When the bulbs were first obtained in the autumn they were planted in ordinary garden-mould, in clumps, dotted about in different parts, and the following year they flowered well. The next year they appeared to be gradually dwindling away, very few perfect flowers being produced; and in August the bulbs were taken up, and an examination showed that there were hundreds of small white mites harbouring between the scales of the bulbs. The bulbs were washed in warm water in which a small quantity of petroleum was incorporated, in the hope of killing the mites, and immediately planted into light, rich soil, in which the bulbs have flourished ever since. This species deserves a little more attention from gardeners than, as a rule, it obtains, and means should be taken to clear the stems and blooms of aphides, which are apt to be troublesome.

BELGIUM.

HORTICULTURAL EXHIBITION AT TERVUEREN.

THE programme for flower, vegetable, and fruit shows to be held this year at Tervueren, on the occasion of the Brussels Universal Exhibition, is just published. The horticultural shows will be on the following dates:—Inaugural exhibition, May 9 to 12; Cat. Roses, June 12 to 14; general exhibition, July 21 to 25; Chrysanthemum show, November 6 to 8. Exhibitions of vegetables will be held on May 15 to 17, June 11 to 13, August 2 to 4; September 25 to 28. Fruit shows on the same days, but not in August.

The prizes will consist of diplomas of honour, and of Gold, Silver, and Silver-gilt medals. At the inaugural and general shows, medals are offered for the most tasteful groups arranged by the exhibitors, and 1 composed of choice and rare plants.

NOTES FROM BRYANSTON, BLANDFORD.

BRYANSTON, the fine estate of Lord Portman, is charmingly situated near to the picturesque town of Blandford. The visitor enters the grounds from the town by a gateway of noble proportions, flanked by

quaint lodges, whence runs a road in admirable keeping, and adorned on either hand with a variety of tree and shrub, and of the latter some gigantic *Buxus* form a striking feature. The mansion is a modern building standing on an extensive lawn skirted on one side by a wood. The river Stour bisects the lawn; and from this part of the garden good views of Blandford town, the Dorsetshire hills, and distant and adjacent woods are obtained, the whole forming a very pleasing prospect. Bryanston is a well kept-up domain, and both gardening and farming are carried on in accordance with modern ideas; but it is of the gardens that I chiefly wish to speak.

These are under the charge of Mr. Arthur Allsop, an excellent gardener, who appears to be fully equal to the great demands made upon his abilities. There are very large quantities of cut-flowers required, and especially in the winter and spring, and Lily of the Valley, Hyacinths, Tulips, Narcissus, *Staphylea colchica*, Lilac, *Azalea mollis*, and *A. indica*, are forced in

Violets are made a special feature, and never in all my travels have I witnessed such an abundance of fine flowers. *Marie Louise* is the favourite variety, and some 2000 plants of it are grown in cold frames. Several of the flowers that I measured were larger than a florin, and there seemed to be as many flowers almost as leaves on the plants. Mr. Allsop has evidently hit upon the right kind of treatment for the Violet in winter; and perhaps this note, when he reads it, will induce him to describe his methods. Judging from photographs which I saw of such summer-flowering subjects as *Gloxinas* and *Streptocarpus*, these plants must be grown in grand style. Numerous foliage plants for use in indoor decorations, for which there is a fairly constant and large demand, occupy several of the glass-houses. The vineries and poacheries already started had a thrifty look, and will be worth seeing at a later date. The fruit and kitchen-gardens are laid out on a very extensive scale, and are very productive, as they needs most be, to supply the needs of a large establishment. The pleasure-

It is to be feared that the majority of the Council regard the papers as bores, and show their appreciation of them by their absence. *A Fellow.*

HYBRID PRIMULAS.—Reading the remarks of "J. H. W." with respect to his efforts to intercross *P. obconica* and *P. Sieboldii*, which like to so many other efforts at intercrossing seem to have been a failure, I am tempted to ask whether there is on record any well-authenticated case of the successful intercrossing of two absolutely distinct *Primula* species. In years past I have had many trials in that direction, but never with success. I rather think that indefatigable and able hybridist, the nurseryman to Messrs. Sutton & Sons (Mr. James Martin) could tell a long story with respect to efforts he has made from time to time with diverse species. It is generally understood that we owe the *derists' Auricula* to the intercrossing of *P. auriculata* with *P. viscosa*; but even if it be so, these are such allied forms that they can hardly be classed as distinct species. The subject is of exceeding interest, and one very reasonable too, just now, when *Primulaceae* are just about to bloom. *A. D.*



FIG. 46.—A GROUP OF LILIUM CANDIOUM, GROWN IN THE GARDEN OF A. S. DOLTON, ESQ., MOOR COURT, CHEADLE. (SEE P. 160.)

great batches to meet the demand. One of the things very largely grown is *Freesia refracta alba*, of which 4000 potsful are annually got ready. The *Cyclamen* is cultivated with equal success, and at the present time about 300 plants are in profuse flower, the varieties *Butterfly* and *Vulcan*, many of them with fifty to sixty flowers, being very conspicuous objects. Tree Carnations, Border Carnations, and *C. Souvenir de la Malmaison* in variety are capitally cultivated. About 200 fine plants of the almost indispensable *Carnation*, *Miss Jolliffe*, are at the present date in fine bloom. Border Carnations are grown to the number of 2000, and the collection includes many of the finest varieties. Of *Carnation Souvenir de la Malmaison* about 400 healthy plants will form a display of themselves for some time to come. Many plants of the rising favourite *Marguerite-Carnation* are grown in 5-inch pots, which have afforded a rare harvest of bloom, and are still affording some flowers. This is a very valuable type of *Carnation* to grow for cut flowers; moreover, its cultivation presents no difficulties.

grounds and flower-gardens cover many acres, still they are being enlarged and improved. *Alfred Outron, F.R.H.S.*

HOME CORRESPONDENCE.

LECTURES AT THE DRILL HALL.—I read Dr. Carville's complaint concerning the reading second-hand of the papers or lectures sent to the Council of the Royal Horticultural Society for the Tuesday meetings there. Now, in connection with ordinary gardeners' associations, of which there are so many doing excellent social and educational work in the kingdom, it is the rule to pay readers of papers any out-of-pocket travelling expenses they may incur; thus, they rarely have second hand papers. Why cannot a Society, such as is the Royal Horticultural Society, so long as it invites papers of this nature, offer to repay the readers such expenses as they may incur in coming to London for the purpose? Of course, discussion in the absence of the writer of the paper is absurd. It is of not the least use to object to any statements made in the paper when the writer is not there to defend them.

A GERMINATING APPARATUS.—The costly and elaborate arrangement illustrated on p. 143 of your last issue, is totally unnecessary even for the most exact work. The most practical and useful form, which I myself used for many years, was constructed as follows.—The bottom of the apparatus consisted of a flat copper box about 1 inch deep containing water; the contents of one 3 feet long by 16 inches wide are about 2 gallons. To the sides of this box are soldered the copper-frames carrying the glass sides, these being fixed, the top glasses only being removable. For a germinator of this size for ordinary seeds not requiring very high temperatures, say under 70° Fahr., it is sufficient to place under the tank an ordinary No. 00 Bray's lighting burner at a distance sufficient to prevent the possibility of the flame touching the copper. A gas consumption of 1 cubic foot per hour will maintain a rise of about 35° Fahr. in the tank over the normal temperature of the room, and owing to the very slow changes ensured by the bulk of water, manometers and pressure-governors are quite unnecessary. In an ordinary living-room a gas consumption of ½ cubic foot per hour will maintain an average 75° F. bottom-heat, and 1 cubic foot will maintain over 90° F., a tempe-

ture at which most, if not all, seeds of tropical plants germinate rapidly. In the apparatus referred to the pots are covered with glass plates, to guard against falling spores; but under any circumstances, the products of combustion do not affect the most delicate plants in the case. No doubt, some small part of the products will get in the case from the top; but even if the quantity were large, the result would be the same, as the moisture condensing on the glass would at once take up any sulphur compounds present. In such a case as this I have grown for years in succession Orchids and delicate filmy Ferns, the room in which the case stood being lighted by gas every evening, without any special ventilation. *Thomas Fletcher, Grappenhall, Cheshire.*

THE BAY LAUREL (LAURUS NOBILIS).—I send you a specimen showing how fruitful the Sweet Bays are here this past season. We have a fair crop of fruit in average years, but I have never seen the berries so plentiful as they are at present. Some of our bushes look very ornamental indeed with their black glossy berries. *D. C. Powerscourt.*

SEEDING CYCLAMENS.—The culture of Cyclamen from seed can be made very profitable, but it needs great care throughout, and it is especially important that seed should be obtained from plants bearing superior flowers. The best time to select flowers is about the middle of February, and more than nine should not be selected from one plant. They must be gently brushed with a fine camel-hair brush two or three times when the sun is bright, taking care not to bruise the pistil. As soon as the seed-pods are formed, a slight top-dressing of Clay's or Thompson's plant-manure may be given. About the beginning of June, the seed will be almost developed, and the plants should be kept rather dry at the root. It is a mistake to throw the corn away when the seed has been gathered, for a Cyclamen if properly treated will thrive for six years at least. When the seed has been taken to the sowing, the pots, should be taken outside and exposed to the sun for about three weeks, and watered weekly. The dry leaves should then be cut off close to the bulb with a pair of scissors, care being taken not to tear the bulbs. Afterwards put them in cold frames and slightly shade, watering them about three times a week with fresh cow manure-liquid. After the bulbs have shown signs of new growth, they should be taken out and potted rather firmly in a compost of three parts good fibrous loam, one part of leaf-mould, and a small quantity of silver-sand. Give them a temperature of 60°, and a little air when the sun is warm until they have made a fair amount of growth, when they should have exactly the same treatment as is required by seedling plants. It is a great advantage to exhibitors that flowers from old bulbs come much better and clearer than from seedlings, and generally most of the flowers come at one time. *Charles White, Stevenage.*

CYPRIPEDIUM INSIGNE SANDERÆ.—Kindly allow me a few closing observations in reference to Mr. Hardy's supposed plant of this *Cypridium*. I may say that it was not by any means a secret at the Manchester Show of November, 1895, that the plant exhibited was the one he bought at the Pickering Lodge sale. Allow me again to call attention to the *Gardeners' Chronicle* of February 6, wherein he says that he never showed his *C. Sanderae*. After noting this, please turn to p. 145 of your last issue, and behold his statement, viz., that the plant exhibited at the show referred to, was not only *Sanderae*, but that it came "straight" from Baron Schroder. Here we have two very opposite statements, both majestic and equally exact in their claims, and I must leave them for the puzzle-expert to solve. I still maintain that the variety shown by him is inferior, and not the original *C. Sanderae*. I quite admit that dividing a plant may cripple the full development of its flowers for a time, but it will never alter their leading features to an extent beyond recognition. *S. S.*

VARIATION AND ENVIRONMENT.—Mr. Drury, in *Gardeners' Chronicle*, February 27, p. 133, calls attention to a very important fact, and one often stated to show that varieties may arise among other plants of the same kind without any apparent "changed conditions of life." Of course Darwin demands that they should so appear as a rule, otherwise there would be no struggle for life, and no scope for natural selection. But both Darwin and Dr. Wallace think that "the country must be undergoing some change" which would induce variations to arise. Mr. Drury shows, what is well known, that varieties do occasionally arise among the parent type, especially

if it be a very plastic one, as in the case of Ferns; but the degree of frequency of such isolated appearances is very small, taken as a whole, i.e., when contrasted with the normal variations in plants distinctly induced by some marked change of environment; and his words really express accurately all that can be guessed as to the mode of arising in Nature.—"It may even be in some subtle local modification of the parental Fern, which consequently produced the modified spore." Precisely so; but then this implies some, however minute, cause presumably to be traced to a new element in the environment, and this is all that is maintained. Usually a plant migrates into a new habitat (by dispersal of its seeds, &c.), and then varies; but if anything happen to it without migration, then, it may vary while still residing among its kind and kin. Mr. Drury asks for "a more extended study of plants in a wild state," but I would say that the study of wild plants, with their methods of evolution, always kept steadily in view, has convinced me that all the various types of plants, as represented by their vegetative facts, have arisen solely by adaptation to their environment, as I have shown in my last book, *The Origin of Plant Structures*. This conclusion is based on an overwhelming mass of evidence. It is, moreover, thoroughly corroborated by horticulture, as is so well shown by Mr. Bailey. Hence, when a strange form suddenly appears, where we may not be able to see any difference in the environment, the conclusion is inevitable that some "subtle local" influence is at work which has affected that one plant and no other about it. That such is the right conclusion is strengthened by cultivation, for here different forms arise, and sporting is far more frequent than in the wild state. Hence the coincidences between "sporting" and "artificial soils" of gardeners force the same conclusion, that there is, directly or indirectly, a distinct cause and effect—"some subtle modification" of form arising in consequence. *George Henslow.*

GARDENERS' RELIEF SOCIETIES.—I may read with pleasure the remarks made at different times by writers in these pages, in regard to the necessity of upholding the few societies which afford relief to gardeners when past work, and of assisting in the support of gardeners' orphans. I should also much like to see discussed the pros. and cons. of a scheme for affording relief to gardeners when out of employment. A great number of gardeners are always lacking situation for a great variety of reasons, and only too often through no fault of their own; their savings are soon spent, and many are reduced to great straits. It may be urged against such a scheme that it would afford a premium on indolence, but that is not my opinion. It should be made an essential part of the scheme that it should be supported by the subscriptions of gardeners themselves, and that only subscribers should benefit. The subscription might consist of £1 a year, and the amount of relief afforded should be small; say 5s. a week for single men, with 2s. 6d. extra for wife, and an additional 1s. for each child. I am mentioning these figures at random. I leave it to others of greater experience in such matters to say if such a scheme could be made self-supporting. A strict investigation would be made in the district in which an applicant resides before placing him on the register, so as to prevent undesirable persons joining. I should like to have the opinion of gardeners on this matter; also whether the formation of an entirely new society is desirable, or whether it would be better that the existing societies should take up the matter. Neither should it be looked upon as a scheme for commemorating Her Majesty's Jubilee, of which there are already enough; but I feel that no harm can be done in stating the needs of self-help for gardeners in this very important matter. *L. F. P.*

GRAPE GROS MAROC AND OTHERS AT EDINBURGH.—In reply to the person who called himself a "Northern Gardener," who asks why I did not write "somewhere about the judging of Grapes" at Edinburgh, may I remind him that if he had read the recent numbers of the *Gardeners' Chronicle* he would not have required to ask that question; it was not I who started the topic, and one reason for my taking part in the discussion was that I was asked so to do. I am sorry that my "audacity" has given offence to a "Northern Gardener." I am not, however, sorry, nor do I regret one single word that I have written about this matter, and my contention has already met with support from independent sources. *David Andrie, Lambert House Gardens, Strirlingshire.* [Enough has now been said on this subject. Ed.]

VICTORIAN ERA FUND.—My suggestion does not meet with everyone's approval. I did not think it would do so; but I still maintain that there are, I should think, very few gardeners, or young gardeners, who cannot afford to contribute the modest sum I mentioned. Therefore, although I quite agree with your correspondent ("Life-member and Annual Subscriber") that all gardeners, who possibly can do so, should become annual subscribers, I do not agree with him that young gardeners (by which I mean the young men who live in bothies and cottages in gardens, not the labourers), should not be asked to subscribe. I think there are very few of these who would not give a little to help their unfortunate or aged brethren. From my own experience, I have known young men subscribe, both liberally and freely, on several occasions, and I think they would do so again. Since writing my last letter, I have looked over the *Horticultural Directory*, and taking a rough average of three in each garden (one at each scale), I find that such a subscription would represent the handsome sum of over £8000. This is surely something worth trying for, and yet within the reach of nearly all to assist in obtaining. *F. Harris, Eastnor.*

CEDARS OF LEBANON.—Your correspondent, "A Traveller" (*Gardeners' Chronicle*, p. 145), makes enquiries as to seminal variation of *Cedrus Libani* observed in their native habitats. Of that I know nothing, but it is quite certain that among the fine specimens of the tree in this country there are several types which are distinct, both in habit of growth and colour of the needles. A week ago I visited Highclere Castle Gardens, and viewed the famous "Cedars of Lebanon" at that place. Mr. Pope, the gardener, pointed out to me two distinct types of Lebanon Cedar, an erect-growing variety of a deep shade of green with very massive limbs, but with a very short trunk. The other type is of a pendulous growth, and foliage of grey-green, and although seeming to lack the vigour of the erect, growing variety, it has a much finer trunk, clean and straight, such as might have furnished the fine timber of antiquity, as the pendulous habit would prevent the lodgment of the heavy snows of the Lebanon region. There is still another type with an erect habit, and needles of a glaucous blue colour, nearly the same shade as those of *Abies nobilis*, but the tree is not so large as either. Of this type are some very fine trees at Whiteknights Park, Reading. It would indeed be interesting to know if anything has been done to protect the grove of Cedars of Lebanon, bearing in mind that they are of great interest to all civilized nations, and since Palestine and Syria are among the much-visited countries of the east. The wealthy tourist might undertake to do what the Patriarch of the Maronites may be too poor to do, and would be a worthy object for which to solicit subscriptions to protect these trees which are memorials of so many poetic illustrations in Holy Writ. *R. M., Newbury.*

SOCIETIES.

NATIONAL DAHLIA.

The following is the Report of the Committee for the year 1896. If the number of Dahlia blooms, especially of the Cactus varieties, exhibited at the National Dahlia Society's Show at the Crystal Palace, London, in February, 1896, were less than usual, the fact is to be attributed, not to a diminution of zeal on the part of Dahlia growers, but to the abnormal nature of the season. An almost rainless spring and summer effectually prevented Dahlia plants from making their natural growth at the usual time, even where the plants were well watered; and then, the rain coming just when the plants should have been coming into bloom, they started into growth so vigorous that it seemed likely to postpone all flowering indefinitely. Innumerable Dahlia plants, notably in the Cactus and decorative sections, were quite "green" at the time of the society's exhibition, at which, in consequence, some of the largest growers were unable to compete. If, however, the extent of the show was below the average, the flowers staged were of good quality; and the new class for "vase decoration" was generally considered a success and an addition to the exhibition. This same, however, can hardly be said of the prizes offered for "cactus" and amateurs not employing a gardener"—classes for which Messrs. Doan & Co. kindly presented the prizes. The idea in forming these classes was to attract to the society's exhibition new competitors or beginners in Dahlia culture; but the prizes were won by competitors who were independent sources of supply, and who at the same time were taking prizes in some of the largest classes. For another year, therefore, it

would probably be more useful to make two similar classes for "competitors who have never before won a prize at an exhibition of the National Dahlia Society."
The committee have to regret that the donors of special prizes; and also the officers of the Horticultural Club for their permission for holding the society's meetings in the club-room.

The committee deeply regret to have to record the great loss sustained by the society through the death of their President, the Rev. CHARLES FELLOWES, who was elected to the presidency in 1888, and had continued to occupy the post to the last. [Mr. FELLOWES' achievements were dealt with in these pages on December 26, 1896, p. 790, Ed.] The committee also deplore their loss, by death, of Mr. F. FIELD of Tottenham.

The income of the society from all sources, including the balance of £4138.52, in the society's favour from the year 1895, amounted to £14219s. 12s., and the entire expenditure, including the payment of all prizes awarded at the Crystal Palace, amounted to £1343s. 9s., leaving a balance in the society's favour of £2875s. 4s. The Annual Exhibition will this year be held at the Crystal Palace on Friday and Saturday, September 3 and 4, 1897.

With a view to commemorating the auspicious event of the Queen's reign having proved the longest on record, various new classes have been added to the schedule, including especially "The Commemorative Class" (class 1), designed to comply with the wish of the Duke and Duchess of Devonshire, the last six years. The Hon. Secretary of the Society is Mr. J. F. HENSON, Gumsbury House, Acton, W., and the Hon. Treasurer, E. MAWLEY, Esq., Rose Bank, Berkenhamsted, Herts.

READING AND DISTRICT GARDENERS' MUTUAL IMPROVEMENT ASSOCIATION.

A recent fortnightly meeting of this Society was held in the Club Room, British Workman, Reading, when Mr. T. NEWBY presided over a very large attendance of members. After the usual business had been disposed of and five new members elected, Mr. P. H. FORKES, B.Sc. Edin., of the staff of the University Extension College, Reading, gave an interesting and practical lecture on "Insects Injurious to Plant Life."

Mr. Forkes in opening his subject dealt with the great damage done annually by the various pests, and drew attention to the fact that the annual loss to the country runs into hundreds of thousands of pounds sterling. In instancing some of the most noticeable pests, he quoted the Hop aphid as doing damage in one year to the extent of £500,000. Besides true insects, there are a number of pests which do a great deal of damage, the most noticeable of which are the earthworm and red-spider. Passing on to the distinguishing features of insect attack, he dwelt on the different stages of an insect's life, how in some cases the damage is done in the larval or grub stage, and in the mature stage, and in some cases insects are capable of doing damage in both stages. Of the various kinds of attack there are those insects which attack the seeds, flowers, the seedling leaves, and the mature leaves; those, which live on the roots and underground stems; and also those which live in the stems and boughs of trees. Reference was made to the conditions which are essential at the various stages of insect life, are to be successfully prevented, and which are just as much required as are those necessary for the germination of seeds. Of these, shelter, suitable food and warmth were most requisite. This fact that insects are not so lowly organised as it is generally believed was shown by the statement of Lillier as to the presence of certain organs of scent of many insects by means of which an insect can detect its food a long distance off; hence insects often make their appearance on a held after weeding and thinning of a crop, the bruising of the plants resulting in the operation causing them to give forth a smell which no doubt attracts the insects. The lecturer then dealt with the resemblance of frogspawn to growths to the results of insect attack, and showed this more clearly by throwing on the screen some photographs of Swedes which had been attacked by "finger-and-toe," and Swedes which had been attacked by the "Turnip-gall nematode." The habits of insects as to appearance and time of feeding were also dwelt upon, as well as the manner in which an insect fed. Passing on to the types of insects, an account of the life-history and habits of the winter-moth was first given. No in ect is a better example than this one of the value of knowing the habits and characteristics of a pest when adopting measures for prevention and remedy of attack. In this case it is known exactly when the moth will appear, when and where the eggs are laid, and when the caterpillar will come out to do the damage. Knowing these features, the gardener was in possession of valuable facts which he could make use of to overcome the pest. Passing over the various measures adopted, he showed, by the aid of the lantern, a useful form of moth-guard for preventing the female moth climbing up the trees to lay her eggs. The earth-worm was next taken as a type of garden pest, pictures were put upon the screen showing the attack on Cucumber and Tomato roots as well as the various life stages of this pest. In dealing with the measures of prevention and remedy, he instanced, among others, the use of "capture" plants as a means of clearing the ground of the earthworm, a practice which has been adopted in Germany on a large scale with considerable success. In concluding, the lecturer said that though we

knew the habits and characteristics of a number of our pests, yet there was a great deal of information still to be learned, and he pleaded for the help of those who by their natural habits and calling were continually coming into contact with insect pests. A number of questions were asked as to the chafers, Vine-weevils, crickets, &c., and an interesting discussion followed.

Among the exhibits were Princess Beatrice, Gloire du Bourg Violeta, a perfect head of flower of a hybrid Chivein, raised by Mr. BATTOR of Whiteknights; and a "blue" Primrose; whilst an excellent display of insects injurious to plants, seeds, trees, &c. were exhibited by Mr. H. HAM of the Reading Natural History Society. A hearty vote of thanks was accorded to Mr. FORKES for his lecture, and to those who had brought the flowers, &c. for the inspection of the members.

Obituary.

JAMES SALTER, F.R.S.—We regret to hear of the death at Basingfold, Basingstoke, on the 28th ult., in his 73rd year, of Samuel James Augustus Salter. Mr. Salter held a foremost place in medical and scientific circles some years ago, and since his retirement to Basingstoke occupied himself largely with horticultural matters. A short article on planting on chalk soils, originally contributed to this journal, has "gone the round" ever since, sometimes with, sometimes without acknowledgment. Mr. Salter was the first to make the remarkable observation of the occasional formation of pollen-grains within the tissues of the ovule in Passion-flowers as recorded in the *Transactions of the Linnean Society*. He was a man of extensive knowledge, and an acknowledged master in some departments, and this fact, accompanied by great amiability, endeared him to his friends. Mr. Salter came of a family remarkable for their attainments. Among his brothers were Dr. Bell Salter of Ryde, well known in botanical circles, and the late Dr. Hyde Salter, an eminent London physician.



[The term "accumulated temperature" indicates the aggregate amount, as well as the duration, of degrees of temperature above or below 42° Fahr. for the period named; and this combined result is expressed in Degree-days.—"14-degree" signifies 14 continued for twenty-four hours, or any other number of degrees for an inversely proportional number of hours.]

TEMPERATURE.		RAINFALL.		MOIST SUN.				
ACCUMULATED.		No. of Rainy Days since Jan. 1, 1897.		Total Fall since Jan. 1, 1897.				
Day.	Day.	Day.	Day.	10ths.	Inch.			
0	+ 27	8	-	30.12	36	5.8	12	16
1	+ 39	7	+	23.31	29	3.8	31	19
2	+ 11	0	+ 12	-16.3	-	35	37	18
3	+ 37	1	+	-	41.3	37	43	33
4	+ 38	0	+	-	35.3	32	46	25
5	+ 38	0	+	2	-	47	51	26
6	+ 28	0	+	1	+ 18	17	30	19
7	+ 41	0	+	-	18.0	aver	35	43
8	+ 37	0	+	-	58.5	-	36	71
9	+ 31	1	+	19	+ 7	4	38	20
10	+ 50	0	+	6	-	11.2	83	5.5
* 4	+ 48	0	+	30	-	36.5	42	6.2

The districts indicated by number in the first column are the following:—
0, Scotland; N. Principal Wheat-producing Districts—1, Scotland, E.; 2, England, N.E.; 3, England, W.; 4, Midland Counties; 5, England, including London, S.; 6, Principal Grazing, &c. Districts—6, Scotland, W.; 7, England, N.W.; 8, England, S.W.; 9, Ireland, N.; 10, Ireland, S.; *Channel Islands.

THE PAST WEEK.

The following summary record of the weather throughout the British Islands for the week ending February 27, is furnished from the Meteorological Office:—

"The weather during this period was generally fair and dry in all the more southern parts of the kingdom, while in the extreme north and in north-western parts fell on almost every day, the falls being very large in the North of Scotland."

"The temperature was much above the mean, the excess ranging from 4° in the 'Channel Islands' to 8° in the 'Midland Counties,' 'England, E.,' and 'Scotland, E.,' and to 9° in 'England, N.E.' The highest of the maxima, which were recorded either on the 2nd or 3rd, ranged from 64° in 'Scotland, E.' (at Aberdeen), and 60° in 'England, N.E.,' to 55° in 'Scotland, W.,' and 'England, N.W.,' and to 54° in the 'Channel Islands.' The lowest of the minima were registered on the 27th, when they varied from 31° in 'Scotland, E.,' the 'Midland Counties,' and 'Ireland, N.,' to 30° in 'England, S.,' and to 42° in the 'Channel Islands.'"

"The rainfall exceeded the mean over Scotland, and the north of Ireland, the excess being large in 'Scotland, N. and W. In 'England, N.W.,' the fall just equalled the normal, while in all other districts there was a deficit. At some of the southern and southern stations the week was quite rainless."

"The bright sunshine was deficient in most parts of the kingdom, but exceeded the normal in the eastern and north-eastern districts. The percentage of the possible duration ranged from 35 in 'England, E.,' 33 in 'England, N.E.,' and 31 in 'Scotland, E.,' to 18 in 'Scotland, W.,' 12 in 'Scotland, N.,' and 10 in 'England, S.W.'"

ENQUIRY.

"He that questioneth much shall learn much."—BACON.

TERRESTRIAL ORCHIDS AND JACCO FIBRE.—"A.B." asks for information from anyone who may have tried the process for the growth of terrestrial Orchids.

MARKETS.

COVENT GARDEN, MARCH 4.
COT FLOWERS.—AVERAGE WHOLESALE PRICES.

s. d. s. d.	s. d. s. d.		
Anemone, doz. bun.	1 6-0	Orchids:—	s. d. s. d.
Arums, p. 12 bunches	2 0-4	Cattleya, 12 blms.	9-10-0
Bouvardias, per bn.	0 6-0	Odontoglossum	
Camellia, pr. doz.	2 0-0	Crinum, 12 bn.	2 0-0
blooms	0 6-0	Pelargoniums, scar-	
Chrysanthemum,		let, per 12 bun.	4 6-0
doz. bun.	0 6-12	— per 12 sprays.	0 6-0
Eucharis, per dozen	3 0-4	Pyrethrums, 12 bu.	2 0-0
Hyacinths (Roman),		Roses (French), per	
doz. sprays	0 6-10	doz. blooms	1 6-0
Lilac, wh. (French),		— Tes, per doz.	1 0-16
per bunch	3 6-4	— yellow (Maré-	
Lilium Hartii, per		chal), per doz.	4 6-0
doz. sprays	2 0-4	— red, per dozen	4 6-0
Lily of the Valley,		— pink, per doz.	3 0-4
dozen sprays	0 6-10	— Safrano, p. doz.	2 0-2
Maidenhair Fern,		Snowdrops,	
per 12 bunches	4 0-8	— per doz.	1 0-16
Marguerites, 12 blms.	2 0-4	Tuberose, 12 blms.	1 0-16
bunches	0 6-0	Tulips, per doz.	0 6-13
Mignonne, per		Valis (Fr.) Farms,	
doz. bunches	4 6-0	per bunch	2 6-3
Mimosa (French),		— Czar, bun.	2 0-3
per bunch	1 0-16	— doz. bun.	1 0-16
Narcissus, various,		— (Eng.), per	
per doz. bunches	1 6-0	doz. bun.	1 6-2

ORCHID-BLOOM in variety.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

s. d. s. d.	s. d. s. d.		
Adiantum, per doz.	4 0-12	Eriose, hyemalis,	s. d. s. d.
Aspidistras, per doz.	12 0-0	—	10-15-0
— spectata, each	5 0-15	Ferns, small, doz.	1 0-0
Azaleas, per doz.	18 0-36	— various, doz.	5 0-12
Begonia, per doz.	6 0-10	— speciosa, doz.	1 0-7-6
Cyclamen, per doz.	9 0-15	Foliage plants, per	
Dafodils, per doz.	6 0-9	doz.	12 0-36
Dracenas, each	0 6-7	Genistas, per doz.	8 0-13
— variegata, p. doz.	12 0-0	Hyacinths, per doz.	6 0-12
Evergreen Shrubs,		Marguerites, p. doz.	8 0-12
in variety, doz.	6 0-24	Palms, various, ea.	2 0-10
Eriose, per doz.	10 0-12	— speciosa, ea.	10 6-8 0
		Tulips, doz. pots.	6 0-9 0

FRUIT.—AVERAGE WHOLESALE PRICES.

s. d. s. d.	s. d. s. d.		
Apples, French	3 6-4 0	Nuts, Cob, per	
— Crab, per bush.	3 6-4 0	100 lb.	60 0-70
— Wallingtons, per		Peaches, Cob, per	
sieve	6 0-0	box containing 20	8 0-12
Figs, per doz.	21 0-30	Pears, Cob, p. case	
Grapes, Alicante,		— containing 20	7 0-8 0
quality,		— Eclair Bourré	
per lb.	2 6-2 9	(California) lo-	
— Alicante, 2nd		cases, 5 to doz.	
quality, per lb.	2 0-0	per case	14 0-16 0
— Cape, Black, lb.	0 0-10	— Do. do., small	
— Caps Muscat,		cases, 4 to 4½	
per lb.	0 0-10	per lb.	8 0-10 0
— Gros Colmar,		Pine-apples, St. Mi-	
selected, p. lb.	2 9-3 8	chael, each	3 0-5 0
— Gros Colmar,		Strawberries, p. oz.	1 6-19
2nd quality, lb.	3 8-2 6		

VEGETABLES.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Artichokes (Globe), per doz.	20	Mint, per bunch...	0 6-0 8
— Chinese (Stachys tuberosa), per lb.	—	Mushrooms (Indoor), per lb.	0 4-0 6
Asparagus, Paris Giant, p. bun. 20-30	0 3	Onions, English, per cwt.	5 6-0 6
— English, per bundle	6 0-7 0	— Foreign, p.cwt.	3 0-6 0
Beans, French, Channel Is., per lb.	1 6	Peas, ordinary (Channel Is. lands), per lb.	2 0
— Madeira Kidney, per bkt. of 5 to 10 lb.	2 6-3 0	— Telephone (Channel Is. lands), per lb.	2 6
Cauliflowers, Cherbourg, per doz.	1 3-1 9	— Putatoes, New Kidneys, Channel Islands, per lb.	0 3-0 6
— Italian, per mat, Is.	4 0-4 6	— Kidney Potatoes, French, lb.	0 2-0 3
Carrots, per crate	9 0-10 0	Radishes, Channel Is., per dozen bunches	1 0-1 3
Cucumbers, home-grown, select, per doz.	6 0-8 0	Rhubarb (Forced), per doz.	0 9-1 0
— Zuds, per dozen	3 0-5 0	Salsal, small, per doz punnets	1 6
Horseshoe, English, per bundle	2 8	Sea Kale, per punnet, net, 3 1/2 lb.	—
Horseshoe, Foreign, per bundle	1 6	— weight ...	0 9-1 0
		Tomatoes, Canary Islands, per case, about 12 lb.	4 0-5 0

POTATOS.

Trade very stagnant, and stocks still increasing. Dunbar Maincrop, 85s. to 90s.; do., Saxons, 85s. to 70s.; Lincoln Maincrop, 40s. to 70s.; do., Saxons and Abundance, 35s. to 70s.; do., Giants, 35s. to 55s.; Blacklands, 30s. to 55s. John Bath, Wellington Street, Covent Garden.

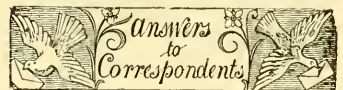
SEEDS.

LONDON: March 3.—Messrs. John Shaw & Sons, Seed Merchants, of Great Maze Pond, Borough, London, S.E., write that notwithstanding the recent heavy rains, which delay farming operations, there is now, as might be expected, a daily increasing demand for Clover and Grass seeds. Buyers find this season that their requirements can be satisfied on very moderate terms. Lucerne and Sainfoin are in good request. There is no change in Tares. Canary seed is firm. For Peas and Haricots, but quotations prevail. Rape seed tends upwards. Mustard unaltered. Linseed steady.

CORN.

AVERAGE PRICES of British Corn (per imperial qr.), for the week ending February 27, and for the corresponding period of 1896, together with the difference in the quotations. These figures are based on the Official Weekly Return:—

Description.	1896.	1897.	Difference.
Wheat	s. d. 25 6	s. d. 28 2	+ 2 8
Barley	s. d. 21 10	s. d. 23 8	+ 1 10
Oats	s. d. 13 10	s. d. 16 8	+ 2 5



ANTS: *Artus*. Use carbolic acid in their haunts and set saucers filled with treacle about, with some means afforded the ants to climb into them.

ASPARAGUS PLENUM: *C. E. W.* A. p. manus, if true to name, is merely a variety, and, like the type, may be increased by division of the roots, and cuttings of the half-ripened shoots, struck in bottom-heat, and possibly from root-cuttings. Seeds are obtainable, but these could not be depended upon to produce the true form of the plant. You are employing more heat by night than is required. Before we can tell you if you have the true plant, you should send a plant, or piece of one, for observation.

BOOKS: *J. W. G.* Botanical Dictionary by Thomas Martyn, B.D., F.R., and L.S.S., Lecturer Professor of Botany, Cambridge University, published 1799. A well-known book. Valuable only as a curiosity. Try the second-hand book-sellers.

CRITICISM OF GARDENER: *W. H.* So long as your employer is satisfied with you, it will not greatly matter what the visitor says about your methods.

FLOWERS FROM SEED IN COLD CONSERVATORY: *T. F.* Annuals: *Acroanthus roseus*, *Alopecurus linifolia*, *Globe Amaranth*, *Amaranthus*, *Hendee*, and others: Asters of all kinds, especially the tall varieties; double flowered Balsams, tuberous-rooted

Begonias, *Calceolaria hercubaea* (for flowering next year), *Canary Creeper*, *Celosia pyramidalis*, *Cinarraria* (for another year), *Celeus* in variety, *Eccremocarpus scaber* (climber), *LOBELIA* *ramosa*, *Martynia fragrans* and others, *Murandaya Barclayana* (climber), *Melastanthus major*, *Mignonette*, *Masturium*, (climber) and *Lycari* varieties; *Nemesia compacta* in variety, *Petunias*, *Rhodanthe Manglieii* and *R. maculata*, *Richard Gibsoni* (foliage plant, copper red leaves, nice grown in pots), *Scypanthus elegans*, *Teu-week Stocks*, and other annual varieties; *Thunbergia alata* and others; and *Verbena* in variety. In addition to the creeping plants already given, mention may be made of *Lophospermum scandens*, *L. atro-sanguineum* (*Rhodochiton velubile*), and *Cobaea scandens*. With the exception of those marked with an asterisk, these seeds should be sown in pots placed in heat, pricking them out into other pots before they spoil by crowding each other, and growing them on near the glass, and with good ventilation in mild weather. The chief thing to guard against is weak etiolated growth. Annuals need rich soil, well decayed manure, not too much drainage material, and but few plants, or as in the case of creepers, *Balsams*, *Celosias*, *Ricinus*, only one plant in a pot. Of the shorter lived plants it will be well to make two s'wings, one late in March and one in the beginning of May. In the case of Balsams, if some of these plants are kept in pots of 6 to 8 inches diameter, and all the flowers allowed to remain, they will give an early display; for when flowering the blooms must be removed until the plants reach the desired size, and one or two large shifts given.

GARDENERS' ROYAL BENEVOLENT: *T. F.* It is next to an absolute certainty that a subscriber for the allotted period will, if he be in need, receive the benefit without the trouble of election. Practically, it is certain, but to meet exigencies which might by some extremely remote possibility arise, it is desirable that the right should be ratified at a general meeting. To those who become life-members it is by far the cheapest investment we know of. The only element of chance in it is that some may never want to avail themselves of the assistance of the fund, whilst others will. The former have the satisfaction of knowing that they are contributing to the welfare of their brethren, the latter, as we have said, are certain to be elected if they have complied with the rules.

GREENHOUSE AND RENT FOR THE SAME: *T. B.* What can you expect if you put up a greenhouse on land that is merely lent to you, but that the owners will make you pay rent for it or pull it down. Rather unwise to spend your money in doing this when the tenancy is so precarious. You had better consult a solicitor about the other matter of which you write.

INSECTS: *A. B. S. H.* The grubs sent with *Wallflower* are those known as the wireworm grubs of the *Clicke-beetle*. They are most destructive to very many kinds of vegetation, and they are difficult of eradication. Lime and salt are both employed with advantage to infested land, and an application of gas-lime in its caustic state is one of the best methods of treatment. The burning nature of this, however, necessitates the operation being done in autumn, and no crops should be put upon the land until late spring. See also article on "Mustard and Wireworms" on p. 150.

INSECTS IN VINERY: *W. H. W.* The name of the beetle is *Trox subulosus*. They are not likely to injure the vines, and were probably introduced with animal matter (bones?) used as manure. Nevertheless, they are, no doubt, a nuisance, and should be got rid of as such. *R. McL.*

LIGUSTRUM CORIARICUM.—The plant growing in the grounds of the Atkinson Morley Convalescent Hospital, Wimbledon, and mentioned by *J. Colebrook* in our issue of February 20, p. 128, is, as the writer of the note informs us, *L. ovalifolium*.

MILDEN ON TEA ROSES: *C. N. May*. Dusting with sulphur vivum (black sulphur), or failing that, the ordinary flowers-of-sulphur. The sulphur when used in a dry state should be applied when the leaves are wet. Sulphur may be mixed like mustard, till it is well incorporated with a small quantity of water, and then diluted with 15 to 20 parts of soapuds, and applied with a syringe fitted with a nozzle. Two or three applications on alternate days are required to get rid of mildew. When a few leaves or shoots are affected, it is better to apply sulphur in the dry state with a

small dredger or pepper-box. The florists sell mildew destroyers, but we are not aware that these are better than sulphur. Be careful in ventilating the house in which are the Roses, keeping it moderately warm and the air in motion, not admitting for the present, air at the bottom of the house, unless it can be warmed by impinging in its passage into the house on the hot-water pipes. Coat these pipes with limewash, having a considerable proportion of sulphur mixed in it.

NAME OF FRUIT: *J. P.* Pear, Knight's Monarch.

NAMES OF PLANTS: Correspondents not answered in this issue are requested to be so good as to consult the following number.—*M.* Your specimen was mislaid, but has now appeared. We regret the delay in replying to you. The plant is probably *Thaya* (*Biota*) *Sieboldi* of gardens.—*Constant Beuler*. The Orchid is a very large and finely-coloured *Cattleya Trianae*; the other plant *Columnnea hirsuta*. The Violets are very fine.—*A. R. S.* 1, *Pellionia pulchra*; 2, *Pellionia Daveana*; 3, *Selaginella denticulata*.—*J. W.* "Taggaste," *Cytisus proliferus* from Canaries. Recommended as a fodder plant for some countries. See *Kew Bulletin*, 1891, 239.

ORCHIDS: *J. E. D.* We do not know of any plant called *Oncidium Bungeana*, imported by Lindley, nor any *Brassia splendens*-ina. The former may possibly be intended for *Oncidium Bungeothi*, imported by Linden, but we find no such name in our records.

PEACH TREES IN UNHEATED HOUSE: *T. F.* Having glass protection only to preserve the blossoms from injury from frost, it will be prudent to keep the house cool and well ventilated so as to retard the expansion of the flowers to the latest date. As a rule for general observation, do not wet the trees or make the soil unduly moist till fruit has set, and the weather gets warmer. When there is no longer any danger from frost, the trees should be syringed night and morning in fine weather, doing less of it in dull and rainy weather. You have done what is right in keeping the borders moist.

PETROLEUM BARRELS: *J. W. G.* Kindle a fire with straw, &c., inside each, and when the staves are slightly charred, and the oil with which the wood was saturated is in part consumed, put out the flames by cutting off the supply of air, and then soak the barrels in water for a few days. The oil remaining in the wood after this sort of treatment is not likely to injure Peach or other fruit trees planted in the barrels.

PRUNING CURBANT BUSHES WHEN PLANTED: *W. W.* It is an ancient practice, and the error does not present it, so far as we can ascertain, that plants possess a large quantity of roots in proportion to its size, so that the growth during the year of planting is sufficient to give the rudimentary framework of the future head, even when pruned. If roots were scanty, it might be better not to cut at all the first year, but encourage leaf growth, as this would lead to greater root extension; and what pruning was required might take the form of disbudding in May or later, according to the state made.

QUITTING SERVICE WITHOUT NOTICE: *Pteris*. As a weekly servant, a week's notice is required from employer or employer under ordinary circumstances.

STACHYS TUBERIFERA STN. CHINESE, AND CHINESE ARTICHOKE: *H. E. C.* This plant has nothing whatever to do with Solomon's Seal. It is a misprint of *or* *and*, in the top line.

COMMUNICATIONS RECEIVED.—*F. H.* Many thanks.—*I. L.* Prof. W. Vermonth.—*J. B.* Can assist.—*R. G.* The Miyata Kibi, Japan.—*Baron F.* Florence.—*R. A.* New Orleans.—*C. S. S.* Boston.—*R. & Co.*—*H. J. C.*—*E. G. L.*—*W. G.* G. H. W.—*J. B. T.*—*A. C. F.*—*H. H. D.*—*W. E. B.* Grand Rapids, E. A.—*A. D. W.*—*L. W.*—*H. B.*—*G. H.*—*London Society*—*Royal Society*.—*H. J. C.*—*G. M.*—*R.*—*Sydenham*.—*Wild Rose*.—*W. E.*—*E. J. L.*—*A. C. P.*—*G. B.*—*D.*—*R. J.*—*C. W.*—*E. C.*—*R. Ma tre*.—*L.*—*Linden*.—*H. G. C.*

CONTINUED LARGE INCREASE IN THE CIRCULATION OF THE GARDENERS' CHRONICLE.

IMPORTANT TO ADVERTISERS.—The Publisher has the satisfaction of announcing that the circulation of the "Gardeners' Chronicle" has, since the reduction in the price of the paper, increased to the extent of more than 90 per cent., and that it continues to increase weekly. Advertisers are invited to take the "Chronicle" as a medium for their country gentlemen and all classes of GARDENERS and GARDEN-LOVERS at home, that it is a specially large FOREIGN and COLONIAL CIRCULATION, and that it is prepared for reference in all the principal Libraries.



THE

Gardeners' Chronicle.

SATURDAY, MARCH 13, 1897.

STREET TREES.

HARDLY more than sixty years have passed since the Champs Elysées were truthfully described as impassable by day on account of the bad state of the roads, and by night by reason of the hosts of vagrants that frequented them. For many years past, thanks largely to improved sanitation and the planting of street trees as a science and an every-day practice, Paris has become assuredly one of the fairest, safest, pleasantest cities in the world. Not by any means that its Seine or its slums are without spot, or perfect. But its street-planting, its parks, its open places, are magnificent. Many of the public roads in the rural districts of France and the main streets of Paris and other great cities are open spaces on a regal scale. There may be, there are sanitary blemishes in France. But every great highway is a ventilator and a purifier, a utiliser of the waste products of life and labour. We are often told in this country that land is too valuable to be spared for the growth of trees in our great cities and towns. But "where there's a will there's a way." Land in France is so much and so severely sliced up by law and custom as to create a land-hunger that is daily growing more intense in its severity. And yet in the Champs Elysées, in the centre of Paris, room has not only been found for one avenue, but for five or more, with flower-gardens and shrubberies thrown in as well. And thus it comes to pass that no one can look for the first time down the Champs Elysées from the Arc de Triomphe to the Place de la Concorde, and ever forget the grandeur and beauty of the sight. Is it a wood, a park, a garden, or a city? It is all four. Much that is far from perfect in the life of this fair city is hidden from view under the thick veil of trees, shrubs, and flowers. With the exception of the Palais de l'Industrie, which earns a large rental to the Municipality, but which is soon to be removed, there are few other substantial buildings among the trees or gardens, and yet the rental for pleasure gardens, refreshments, chairs, theatres, &c., amounted to £11,000 in 1895. The thousands of coloured lamps, which seem immensely popular with visitors and the Parisians, add a weird-like charm to the trees, without revealing much or many of the flimsy buildings hidden away among them. But by planting such grand avenues as the Champs Elysées, the Bois de Boulogne, the Avenue de la Grande Armée, the Boulevard Beaumarchais, the Boulevard Richard-Lenoir, and scores of others almost equally long and spacious, tree-planting has been firmly established as one of the most important functions of the municipality of Paris, and is prosecuted

with a skill and an energy almost unknown to us in this country.

It may now be taken for granted that almost any of our deciduous trees will grow and flourish if sites, soils, and sorts are carefully selected, planting and culture skilfully effected, and adequate care taken in after maintenance.

In planting in fresh towns and districts, however, it is best to proceed tentatively, taking careful notes of those trees in the district that soonest grow into things of beauty and last the longest. There is one more caution that needs to be given to any that may be fresh from Paris. Few are likely to be able to plant other cities in the grand style of that fair city. The majority of the main streets and boulevards of Paris are from 100 to 150 feet from house to house. As much as 40 feet is at times devoted to the centre avenue, with 25 feet on either side to side walks or pavement. And then large spaces are often devoted to flowers, shrubs, and masses of small trees and shrubs. In fact, such avenues as that of the Bois de Boulogne, that links together the Arc de Triomphe and the Bois de Boulogne, is as much, or more, a series of gardens, as a significant avenue in grand luxurious style.

Something on a much humbler scale would suffice for the majority of our towns in this country, not that any street planting can be too good for London, Edinburgh, Glasgow, Dundee, Manchester, Birmingham, &c.; still, a great deal may be done to fringe almost interminable lengths of brick and mortar with refreshing verdure and beauty. The designers of new Edinburgh deserve high credit for their bold and capacious planting between their massive blocks of buildings in their squares. Another charming transformation scene was the evolution of the Prince's Street gardens, from what was virtually a public nuisance. Other and almost equally valuable improvements have been effected in the vale of the Eden, and in many other directions the area of verdure and beauty is extending.

The Royal Botanic Garden, which is now open to all, has long been a centre of light and leading in horticultural matters, and seems greatly prized. Edinburgh has also long been famous for the extent and excellence of its nurseries of fine trees and shrubs. It has also long been the home of the Royal Scottish Arbicultural Society, which exists to foster the love of all that is best and most beautiful in trees and shrubs. And yet the majority of the streets and main thoroughfares of Edinburgh are treeless, or nearly so. The very massiveness and coldness of its stone architecture make matters worse. The paucity of trees gives a feeling of coldness, an air of stiffness and hardness to the towering architectural magnificence of Edinburgh. The life, the mobility of trees; the grace of climbers, the glowing colours of foliage and flowers, are needed to soften and enrich the half-faced monotony of miles and miles of grey walls, uprising from the lowest depth, and losing themselves in the dizzy heights of Scotch mists that rest in cloud land. Public and private buildings, castles, monuments, mountains, constitute a sombre study in grey, that cry out loudly for relief. Fortunately, Prince's Street and most of the main thoroughfares in the new town of Edinburgh, and not a few in the old, are sufficiently wide for double lines of trees, thus converting the stiff, stately streets into avenues as graceful as grateful. The lop-sided squares

could readily be converted into charming avenues, while, at the same time, multiplying manifold their shelters, shadows, colours, variety, and beauty. F.

ORCHID NOTES AND GLEANINGS.

CATTLEYA TRIANÆI.

THIS fine form of *C. labiata* has been beautifying our gardens during the protracted dull weather, and the gorgeous colours and innumerable varieties should render it a close rival to the autumn-flowering form. But two things militate against *C. Trianæi* being the general favourite; it should be, which are, that in the first place, unless it is imported from a known good quarter, an overwhelming proportion of poor varieties is found among them; and in the second place, it should naturally flower in the deal of winter, but from the absence of light and sun during most winters, the buds have to take so long in perfecting that they cannot show themselves to advantage. A box of really grand flowers sent by Joseph Broome, Esq., Sunny Hill, Llandudno (gr., Mr. David Boardman), tells of a better light and a purer air than fall to the lot of plants grown near large towns. The flowers in every instance are large and broad-petalled, and three of them well simulate three good varieties of other sections of the species. One has showy flowers, and expanded frilled lip, like *C. Mendeli*; another is a good representation of a dark *C. labiata* Warneri; and the third has light rose sepals, petals, and tube to the lip, whose broad front-lobe is coloured like *C. Warszewiczii*, even to the two yellow marks, one on each side of the tube. J. O'B.

DENDROBIUM NOBILE NOBILIUS.

In an importation of some 2000 or more Orchids last year, we had at least ten plants of this very pretty variety, some of which are now in flower. It is something like twenty years ago since *D. nobile nobilius* first flowered in this country, and even now it is not by any means common. When the plants are arranged among other species of Orchids, it shows to great advantage. Although I should think that it would succeed when grown in baskets, suspended from the roof, we have been very successful with it in orchid-pots. *D. n. nobilius* requires the heat of the East India-house when making its growth, and plenty of water at the roots, but only enough to prevent shrivelling of the bulbs when at rest, at which time it should be in a lower temperature, but not one that is below 50° Fahrenheit. If it be kept when in bloom in a cool airy house, the flowers will last in perfection for about six weeks, but they must be shaded from the sun's rays. G. Barrois, *Berwick Gardens, Shrewsbury*.

CALADIUMS.

THE Caladiums grown as decorative plants are, many of them, descended from the well-known Caladium bicolor, Ventenat. The beautiful Caladium argyrites—a synonym for *C. Humboldtii*—is, however, distinct from Caladium bicolor, Voot. Both of these species thrive well under the conditions which obtain in and around the district of Trinidad in which the Botanic Gardens are situated, and are easily cultivated. The varieties of the first mentioned species are very numerous, and have long been great favourites with both the amateur and professional gardener. It is singular, however, that while the first species has produced innumerable varieties with parti-coloured or tri-coloured leaves, *C. Humboldtii* has remained true to the original type. The amount of variation in the individual varieties of Caladium bicolor, when grown in Trinidad, is however but little marked when under cultivation; but on the contrary, it is to be noted that where the plant has been cultivated and has been planted into the soil of the garden, there is exhibited a distinct tendency to revert to the original bicolor, or to one which has nothing more than a green leaf—the shape, size, and

habit of the original bicolor, but without coloration of any kind. In the Botanic Gardens so much is this the case, that in many corners, on the lawns and in various other places, plants of *Caladium bicolor* can be seen growing vigorously among grass and other plants, which have lost all or most of the reddish colour in the centre of the leaf which is common to *Caladium bicolor*. The same plant may also be found quite common on many Cacao estates, where it has escaped from cultivation, growing freely under the shade of the Cacao trees. It may also be plentifully found along banks and on the roadsides in villages where it has escaped from gardens. *Caladium*, with home cultivators, are sometimes difficult things to grow. This arises, for the greater part, from the inattention which they receive when their beauty begins to fade. The *Caladium* requires plenty of heat, a temperature from 90° Fah. to one not lower than 65° Fah. being best suited to its growth. When its tubers are matured, and the leaves commence to turn yellow, it will stand a long period of drought; but if the dry weather sets in before full growth is made, the tubers are apt to rot, and they will not keep good in a low temperature. These acts are the key to good cultivation. As much, or more, care and attention is required when the plants have lost their beauty, as when they are in full growth and vigour, and those home cultivators who attend to this point and give them plenty of heat all the year round, plenty of water when growing, and a dry warm storage when at rest, will not fail to have *Caladiums* in perfect health and vigour. *Caladium argyrites* does not require as much rest as *C. bicolor*, but it benefits by being accorded a short period at the proper season of the year. *J. Hart*, in *Bulletin, Royal Botanic Gardens, Trinidad*.

PARIS.

From our own Correspondent.)

NATIONAL FRENCH HORTICULTURAL SOCIETY.

A SPLENDID show of Orchids was the chief feature of the last meeting in Paris. Orchids are decidedly gaining a foremost place here as well as in England and in Belgium, and the number of growers and amateurs steadily increases. M. T. Leroy, gr. to Baron de Rothschild at Armauvilliers, raised *Cymbidium eburneum-Lowianum*, flowers cream-yellow, very fine; *Laelio-Cattleya Leroyana* (*C. gigas* × *L. purpurata*), with very large flowers, fine broadly open pale lilac lip, *Odontoglossum Leroyanum*, a specially interesting hybrid; *O. crispum* × *O. luteo-purpureum*, with numerous large brown spots, the plant having two large spikes. Many other very important groups were shown by M. O. Doin, M. Bert, Mr. Page (gardener to M. Lebouzy, at Bougival), Mr. Dugger (gardener to Madame Halphen, at Ville d'Avray), M. Peeters, and M. Truffaut of Versailles, who had a very important lot of *Cattleya Trianae* in fine varieties. The most interesting plants noticed were *Cypripedium insigne* Sanders, exceptionally fine; *Miltonia Bleumana aurea*; *Pleurothallis Roezlii*. A vermilion-coloured *Epiphrasia* × *Veitchii*, contrasted agreeably with *Laelia anceps Williamsii*, pure white. A specimen of *Sophranitis grandiflora*, with seventy open flowers, was much admired; so was a group of *Cypripedium Salieri* Hyeannum, *C. Rothschildianum*, *C. niveum maximum*, *C. Lathamianum*, extra fine. A curious plant, *Stenorrhynchum speciosum*, was also remarked; many other good varieties were to be seen, but the space you can allot me would not be sufficient to enumerate half of them; however, we must mention the splendidly-grown *Cypripedium Leboudysium*, the *Cattleya Trianae* alba, and *Lycaste lanipes*, of Mr. Page.

A very important horticultural congress is to be held during the next Paris show in June. Amongst many interesting questions to be discussed, we notice the two following:—"Study of the Causes of the Degeneracy of *Cattleyas* grown in Europe;" "Study of the Influence of Selection: 1. In Raising of Plants from Cuttings; 2. In Raising of Plants from Grafts."

POLYCARPIC AGAVES.

The following notes on the flowering peculiarities of some Agaves, have been prepared at the suggestion of Mr. J. G. Baker, F.R.S. They relate to plants cultivated at Kew, where the collection of living Agaves is a fairly strong one, 90 species of the 138 species admitted by Mr. Baker in his *Handbook of Amaryllidaceae* (1885), being represented there. Since the year 1880 twenty-five species have flowered in the Succulent-house, some of them for the first time to cultivation; others were previously unknown to botanists.

It is popularly believed that all Agaves flower once and then die. This is true of some of them, but not all. Dr. Engelmann in his *Notes on Agaves* (1875), says:—"The majority of Agaves are acaulescent and monocarpic (flowering once); the short subterranean trunk continues to grow for years until vigorous enough to evolve the flowering-stem, a continuation

flowered. *A. lurida* var. *Jacquiniana*, as figured in the *Botanical Magazine*, t. 5997, has a trunk 1½ foot long; and *A. rigida elongata* in the Kew Museum has a trunk 4 feet long. Both of these are monocarpic.

The following list comprises the species that have flowered at Kew since 1880, with the year of flowering. Those marked with an asterisk have proved polycarpic:—

* <i>A. allicana</i> , 1891	<i>A. horrida</i> , 1880
* <i>A. americana</i> , several	<i>A. Kerchovii</i> , 1896
<i>A. atrovirens</i> , 1888 95-96	<i>A. Kewensis</i> , 1895
<i>A. attenuata</i> , 1880	<i>A. laxifolia</i> , 1896
<i>A. Basteri</i> , 1888	<i>A. lobanthata</i> , 1887
* <i>A. Bouchei</i> , 1896	<i>A. multinerviata</i> , 1887
* <i>A. Celsiana</i> , 1894	* <i>A. polyacantha</i> , 1895
* <i>A. chlorocantha</i> , 1882	<i>A. tophanta</i> , 1894
* <i>A. dasylirioides</i> , frequently	* <i>A. Sartorii</i> , frequently
* <i>A. densiflora</i> , 1894	* <i>A. Scolymus</i> , 1887
* <i>A. Flemeniana</i> , 1893-88	* <i>A. striata</i> , several
* <i>A. Hasselii</i> , 1894	* <i>A. uvivivata</i> , 1881
* <i>A. Hookeri</i> , 1890	

It is noteworthy that all the species here marked as polycarpic belong to the sub-genus *Littrea*, in which the flowers are borne in pairs, forming a dense subspicate inflorescence. In the sub-genus *Enagave*, typified by *A. americana*, the flowers are in clusters placed at the ends of the branches of a deltoid thyrsoid panicle. So far as I know none of the *Enagaves* are polycarpic.

The thickness of the flower-spike or pole in *Littrea* is much less than that of the stem or trunk of the plant from which it springs. This is shown in the accompanying figures. In *Enagave*, on the contrary, the pole is about as thick as the trunk. This difference may account for the development of lateral growth-buds after flowering in the plants of the one group and not in the other, the energy of the plant being less heavily taxed by the comparatively smaller inflorescence.

The only species known to develop the inflorescence laterally is *A. Sartorii*; in all the others seen the spike or "pole" is terminal, and in the monocarpic species it ends the life of the plant. In the polycarpic species, a number of lateral buds are formed just below the base of the pole, and one or more of these buds develop and continue the life of the plant. In fig. 47 we have an example of—

A. Bouchei, in which this habit is clearly seen, the production of a flower-spike being followed by the development of a growth-bud, which in its turn flowered, and so on until this year, when the flower-spike was succeeded by two growths, both of which have been removed. Fig. 48 represents a section of the stem of the same species, showing the position of the first lateral growth, *o*. Dr. Engelmann observed this character in a plant in the Berlin Botanic Gardens in 1869.*

A. albicans.—The plant that flowered in 1891 was figured in the *Botanical Magazine*, t. 7207. It lived after flowering, developing two lateral growths, which were removed and planted separately three years ago. In the *Gardeners' Chronicle*, in May, 1885, Mr. J. S. Corderoy noted a similar case which occurred in his garden, both the type and the pretty variegated form of it, known as *albo-picta*, having flowered and developed side growths. He called his plants *A. Ousselghemiana*, a synonym of *A. albicans*.

A. Celsiana.—This flowered two years ago, when it had a trunk nearly a foot high. Recently the second growth has been cut off and rooted. Mr. Corderoy stated, in the note referred to under *A. albicans*, that *A. Celsiana* lived after it flowered with him.

A. dasylirioides.—There is a good figure of this species in the *Gardeners' Chronicle*, June, 1889, p. 804, from a plant then in flower at Kew. It flowers frequently, and is in flower now. In this the flower-spike is certainly terminal. The old leaves live for years after the spike has faded, and after the lateral growth has developed to a large size. The spike is peculiar in being ceriseous and drooping, so that if unsupported it would trail on the ground.

A. densiflora flowered two years ago, the dried base of the flower-spikes being still on the plant. The new growth is now a rosette 2½ feet across, on a trunk 18 inches high.

* He also noted *A. chlorocantha* as showing the same character.



FIG. 47.—AGAVE BOUCHEI.

Portion of the stock, showing five successive terminal flower spikes; *a*, position of the last lateral bud, *b*, latest flower-spike; *b*, *b*, *b*, *b*, remains of previous flower-spikes.

of its axis, and dies after bearing fruit. . . . A few have persistent trunks, sometimes of considerable dimensions; these produce flowers repeatedly, just as the caulescent *Yuccas* do, from axillary branches after a terminal bud has fulfilled its destiny and died." These are called polycarpic.

Probably more species of Agave belong to this second or polycarpic group than has hitherto been supposed. Of the twenty-five species flowered at Kew since 1880, no fewer than nine have proved polycarpic. Some of these have been described as acaulescent, and therefore monocarpic. This term, acaulescent, does not properly apply to many Agaves for which it has been used, many of them forming distinct woody stems above-ground. Judging by cultivated plants, it would be more accurate to say that the majority of Agaves are shortly caulescent.

The produced trunk is not always associated with a polycarpic habit; for instance, *A. attenuata*, which develops a trunk 6 feet high, dies after once flowering. *A. laxifolia*, also distinctly caulescent, died after it

A. Haseloff.—This also flowered two years ago. It has a trunk 1 foot high, and one lateral rosette a yard across.
A. polyacantha flowered last year (1895). Most of the old leaves are still on the plant, and it has now a new rosette of about twenty leaves, 1 foot long.

A. Sartori.—A figure of the Kew plant was published in the *Botanical Magazine* in 1877 (t. 6292), when it flowered for the first time. It then had a "stem 1 foot high, forked dichotomously." It bifurcated again at the height of 4 feet, the stems being now 5 feet high. They show distinctly the scars of

eleven flower-scapes, which occur at intervals of about 9 inches. They also show plainly the lateral position of the inflorescence, the ring-scars on the trunk being only partially interrupted by the base of the flower-spike.

A. striata.—Plants of this have flowered several times lately at Kew, and in no case has the plant died or even lost its leaves in consequence.

Some species appear to develop lateral growths in advance of the flower-spike. Thus *A. Kerchovi* major, lately in flower in the Palm-house, has a distinct trunk 2 feet high, supporting a rosette of leaves 6 feet across, from the centre of which the spike rises to a height of 15 feet. From the axils of the upper leaves three arm-like side-growths have developed; they are 18 inches long, the lower two-thirds clothed with short imbricating leaves, the upper portion being a large rosette of leaves, 13 by 3 inches. These growths are more analogous to the stoloniferous suckers that are developed from the base of the trunk of most Agaves, than to the growths of such as *A. Bouchei*. A large specimen of *A. Botteri* has had its central growth arrested by some cause,* probably the formation of an incipient flower-spike, and two lateral growths have started from near the centre. This species belongs to the Littreæ. It evidently has the power of developing lateral buds near the top of the axis.

The basal stoloniferous growths appear to be produced at any period of the plant's existence, and are not in any way connected with the production of flowers. In some cases they are so numerous that quite a colony of plants is formed round the original one, suggesting gigantic Saxifrages. If the growing point of a stolon gets damaged, laterals are readily developed from it, a bud being quite perceptible in the axil of every one of the scale-like leaves which clothe these stolons. They may therefore be utilised for the multiplication of the plant by cutting them into lengths of a few inches, and inserting them as cuttings. In *A. filifera* (fig. 49) these stolons are 2 feet long.

Many Agaves produce a crop of bulbils or plantlets on the flower-spike after the flowers have faded, and generally when the capsules (fruit) have not matured. In some cases, however, both capsules and plantlets have been borne together, though I have never seen a case at Kew. These plantlets are often very numerous. In the species which produces *Sisal Hemp*, *A. rigida sisalana*, this "reproduction by means of pole-plants is very interesting. After the blossoms begin to wither and fall away, buds develop from the stalk below, and grow into small plants. After attaining a size of from 3 to 10 inches, they fall to the ground and take root. They have very great vitality, and develop into stout, strong plants. In cultivation they are much used for planting. A single flower-stalk (pole or mast) will bear from 1000 to 2000 pole-plants. As many as 2500 have been reported. The species is said to have spread over the Florida Keys by means of buds from the poles being driven by the currents of air and water." †

It would be interesting to know if this particular Agave is ever propagated by means of seeds, or if basal suckers and pole-plants only are used. Sometimes the pole-plants do not appear until long after the flowers have faded, and the leaves have withered. Last year the only plant known to exist of *A. kewensis* flowered in the Succulent-house at Kew. It had never produced any suckers, and therefore the production of seeds or pole-plants was anxiously hoped for. Not a single capsule matured, the plant having almost perished and the pole itself turned yellow before any plantlets appeared. Finally, however, a good crop was yielded, and there are now plenty of healthy young plants of this very distinct species of Agave at Kew.

A. attenuata does not push out stoloniferous growths, but develops instead bulbils about the base of the stem, which, when large enough, delisce readily, and fall to the ground, where they take root. *H. Watson, Kew.*

* Since this was written the plant has pushed up a stout flower-spike.
 † *The Agaves of the United States*, by A. J. Mulford (1896). p. 92.



FIG. 48.—AGAVE BOUCHEI.

The right-hand figure shows the stem b, reduced $\frac{1}{2}$; latent leaf buds at e; lateral leaf-bud developed at c; a, remains of terminal flower-spike. The left-hand figure shows at a, section of stem; b, terminal flower-spike; c, lateral leaf-bud.

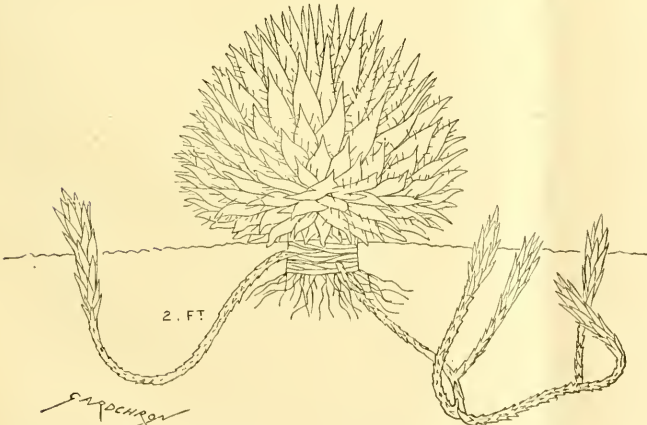


FIG. 49.—AGAVE FILIFERA: SHOWING STOLONIFEROUS SHOOTS.

THE CULTIVATION OF TENDER ALPINES.

For some years past I have devoted attention, in the Jardin Alpin d'Acclimatation, to the study, which may be called experimental, of the acclimatation of certain tender alpine plants which are considered impossible to grow at Geneva. The results, especially of cultivation in sphagnum, of which I spoke in the *Gardeners' Chronicle* on April 11 and July 11, 1891, are of sufficient interest to be further spoken of here. Last summer, at the Congress held during the National Swiss Exhibition here about ten times between May 1 and October 15, alpine plants sent from the Jardin Alpin were shown, grown in pots of sphagnum in the full sun, and these attracted much interest. Certain of these plants flowered throughout the summer, and among them were specimens of *Linaria alpina*, of *Hutchinsia*, and even of the beautiful *Houstonia cerulea*, which I received from England, and have never before succeeded with. There were 100 pans containing rare and tender plants, all of which I had almost given up cultivating at Geneva, and which I could only try to introduce into our gardens among the Alps. I know that the system of cultivating in sphagnum has been tried in England, consequent upon the two previous articles about it in this paper, and I have learnt from letters and conversation that, in Devonshire and Cornwall for instance, good results have been obtained, but that, in other countries failure has ensued. Evidently there is everything in the influence of warm and dry air, and it is absolutely necessary to experiment only under these conditions. The proof of this is, that, at Nice, Cannes, and Tassin, the system has succeeded well, while in North Holland, as in England, no results have been obtained.

It appears evident to me that sphagnum exercises a mechanical and physical influence very important to alpine plants. It serves as a sponge round their foliage and roots, absorbing damp when that is prevalent, and restoring it gradually to the air or soil when drought begins. This is, as I have before said, the part played on a greater scale by the rocks in nature. Sphagnum is an equalising element; it condenses and dispenses moisture in a valuable way. Its chemical action seems void, as we have grown, in pans and under the same conditions, species very nearly related, and which pass for sand or for lime-loving varieties of the same type, and they have varied slightly. They have completely retained their characteristics; and thus, *Linaria alpina* and *L. petraea*, which are so similar, that one is considered to be an oolitic form of the other, keep up and even slightly accentuate their individual differences at the end of two years' simultaneous cultivation in sphagnum, and I have come to consider them as true and different species. The late Professor Romanes of Oxford experimented on the variability of species, recommended me to conduct my investigations on these lines. We have in our Jardin Botanique de la Linneæ, at Bourg de Pierre, planted side by side, species similar in type, but from varying habitats, as *Ranuncula pyrenaica* and *serbica*, *Linaria alpina* and *petraea*, *Gentiana Clusii*, *Kochiana alpina* and *angustifolia*, *Geranium argenteum* and *cinerinum*, &c. But we have not succeeded in preserving their distinctive characteristics so well as with plants grown in sphagnum.

Further, strange to say, plants grown in sphagnum flower more abundantly than when wild; the blooms are earlier and last longer. For instance, I had last year a plant of *Cyananthus lobatus*, which had not before flowered with me, and which, grown in sphagnum, bloomed from May to September. I have now, in my window, three pans of flowers which are much admired; one contains four plants of *Soldanella montana*, bearing, in all, sixty flowers. I have never before bloomed this *Soldanella*. It is, therefore, plainly shown that the use of sphagnum for soil is the best plan for growing and flowering delicate alpine plants in dry warm climates. Its retention of moisture enables it to supply the lack of that wet and moisture which, in the Alps, is so freely supplied to the plant. I should add, that I have succeeded in blooming the

fine and rare *Diapensia lapponica* by this plan. Last April I had a strong plant in a pot of sphagnum, and it has now borne sixty-eight flowers. This plant is difficult to cultivate, and the seed often remains eighteen months before germinating. It is very graceful, and is elegant when well developed. *H. Correvon, Jardin Alpin d'Acclimatation, Geneva.*

LILIUM HUMBOLDTI.

The typical *Lilium Humboldtii* has a large ovoid bulb, more or less oblique, and occasionally prolonged laterally in a semi-rhizomatous manner. The scales are thick, and the bulb very compact. In height the stem is often above 4 feet. I have seen it 9 feet high, and in one instance a single stalk bore eighty buds. Ten or fifteen flowers in a panicle are common. The lower pedicels are longer, and growing gradually shorter, form a broadly conical panicle. The flowers are large and of such substance, of a uniform rich reddish-orange spotted with maroon, and strongly reflexed. Nature has provided for the weight of the great panicles by giving this Lily a very stout, erect stem, which is well furnished with leaves in full whorls.

In its native home in the foot-hills of the main Sierra Nevada, *Lilium Humboldtii* usually follows the belt of Yellow Pine (*Pinus ponderosa*), and grows in the open woods. It does not often grow above the 4000-foot line, nor on the lower foot-hills. Just how far north it extends I have never been able to learn. I know of it in Tehama County, California, but have never seen or heard of in the Mount Shasta region. It has never been reliably reported from any point in the northern Coast Range of California, although I have recently learned of a Lily in Humboldt County which can only be *L. Humboldtii*, or an unnamed species. Neither have I been able to learn of this Lily in the foot-hills of the lower San Joaquin Valley, nor farther south than the Yosemite road. Generally it is strictly a mountain species, but there is one notable exception in the upper Sacramento valley. Some fifteen years ago it grew sparsely at one location in the Oak forest which borders the river; it is now abundant for 12 or 15 miles along the river. In El Dorado County I saw it flowering to perfection last June. A fire had gone through some second-growth Pines a year or two before, and the magnificent panicles made a gorgeous display high above the Ferns and weeds. The top of the hill had been cleared some years before, and was cultivated in grass and grain, but in the new stubble many stubs of the Lily-stalks could be seen, and from wounds made by the plough the bulbs had been broken into groups of from two or three to a dozen bulbs. The Lilies are evidently on the increase under the conditions, and the bulbs were very healthy. As a cultural hint I would say that *L. Humboldtii* always grows on well-drained soil. The subsoil is usually rocky, the upper soil clayey or volcanic.

In Southern California there are two other strongly marked types of *Lilium Humboldtii*. Of these *L. Humboldtii*, var. *magnificum*, is nearest the northern form. This superb Lily has a large bulb, which is usually broader and rounder than in the type, and which speedily turns purple on exposure to the air. At its best it is even sturdier in growth than the type. The foliage is similar, dark green and glossy; the stem is much darker. The flowers, while of the same form and borne in a similar deltoid panicle, are differently coloured. At the middle of the flower the ground-colour is a rich orange-red; the maroon spots are surrounded by a reddish circle. On the upper half the reddish circles become larger, until they merge into each other at points, making an irregular combination of dark maroon spots, red ocellations, and of dark reddish-orange ground in blotches. This form of *L. Humboldtii* is found in the San Bernardino Mountains which make the southern end of the Sierra Nevada, in the Coast Range, as far north as Santa Barbara, in the Jacinto Mountains, and on some of the islands off the coast of southern California. There are some variations within this

range, but I am satisfied that bulbs from all of these localities grown side by side would prove practically identical. From the cultivator's standpoint it is important to observe, that while the *L. Humboldtii* of the northern Sierra seldom, if ever, flowers the first year, an ordinary bulb of the variety *magnificum* will bloom well the year it is planted, while even small bulbs of *L. Bloomerianum* almost always do. My information is, that the variety *magnificum* usually grows in the deep debris near the streams in shaded mountain cañons.

Lilium Bloomerianum is to the variety *magnificum* as a pigmy to a giant. Two or three feet usually measures its slender pale stem, and it is sparsely flowered. The much smaller flowers have a paler orange ground, and are not so richly coloured. The ocellations and red-blotched apex of segments are the same. The bulbs are small, not averaging one-fourth the size of those of the other forms. I have referred to the peculiar two or three-jointed scales. I have seen bulbs in which nearly all of the upper joints readily rubbed off, leaving a mere stub of a bulb. *L. Bloomerianum* is found in the Pine belt of the high mountains of San Diego County.

The following figures, showing the average size of flowering bulbs of the forms of *Lilium Humboldtii*, may be of interest to some: In 750 bulbs of the typical *L. Humboldtii* 196 were from 9 to 12 inches in circumference, 351 from 8 to 9 inches in circumference, and 203 from 7 to 8 inches. The latter averaged 33 ounces in weight; second size, 44 ounces, and largest size, 9 ounces, with a few 14 ounces in weight. Bulbs of *L. Humboldtii*, var. *magnificum*, measure about the same, excepting that a few exceed these measurements.

Large bulbs of *Lilium Bloomerianum* will measure 6 inches in circumference, and weigh 23 ounces. Very many flowering bulbs measure 3 to 4 inches, and weigh 1 ounce each. *Carl Purdy, in "Garden and Forest."*

CULTIVATION OF COLEUS.

A RECENT article published on this subject suggested to me a different way of growing these plants than that therein mentioned. Cuttings are made from robust specimens of the *Coleus* which it is desirable to propagate, and which have the brightest and most highly-coloured foliage. These cuttings are placed in frames, and in a fortnight or three weeks have rooted sufficiently to be transplanted into 60-sized pots. Cuttings should be made only in the beginning of warmer weather, when the sun's rays are increasing in power. This heat is an important factor with plants grown for exhibition. Shade should never be given. At the end of May the soil used for growing (it may be *Alternanthera*, *Tomato*, or some other plants) is made up into beds in which the pots of *Coleus* may be plunged in frames. The plants should be in pots of suitable size, filled with rich and nourishing compost, and should remain in the frame all the summer. Air is excluded at night, and admitted in the daytime, according to the outside temperature.

The frames face south, and the plants are fully exposed to the direct and beneficial action of the sun's rays. In the height of summer the temperature of these frames often rises to 40° C. (104° F.). The whole secret of this method of cultivation consists in frequently syringing the foliage in sunny weather—that is to say, never giving water when the sky is overcast, but providing it in abundance when the sun is fiercest. By repeated pinching, nice bushy plants are formed, whose leaves are variously and brightly coloured, and well reward the grower. An experienced gardener told me, some years ago, when looking at a group of *Coleus Verschaffeltii*, "My father, who was a gardener in Belgium, had always in his 'parc Anglais' a much-admired bed of *Coleus*, shaded from the north, and exposed to the sun. The plants were never put out until June 2 or 3, and all came from strong cuttings made the same year. The bed, much raised, was well drained, and consisted almost entirely of horse-dung. When planting was over, the surface of the ground was covered 2 inches deep with farmyard litter. In the centre of the bed was a pipe, whence, on turning a tap, a fine jet of water played all

over the leaves and soil during the hottest hours of the day only. In the greatest heats of July and August the spray was only discontinued at sunset." In this kind of watering it is essential to discontinue it in time for the foliage to dry before sundown, except during the warm nights of July and August. As the plants grow rapidly, they need frequent pinching, which ensures a rounded shape. The centre plants will grow to over 5 feet in height.

This method of cultivation is practised in Belgium, where the air is generally dryer than in England, and the variations in temperature are less frequent. During the past hot summer what results might not have been thus obtained in England! This method of growing Coleus is by no means an imitation of their natural conditions. It is rare for these plants to flourish in the full sun, but there may be two reasons for the gardener's plan. A rule may be followed literally or intelligently; obeyed in the letter or in the spirit. But I should soon be led off into a dissertation upon plants with variegated and marked leaves. These colourations are, indeed, a degeneration, showing an unhealthy tendency. To intensify this complaint, this variegation, the exciting cause must be encouraged. Two distinct conditions must be considered; plants naturally variegated must be distinguished from those upon which the variegation is a "sport," or departure from a natural rule. It is the part of art to maintain and accentuate variegation; if natural, by stimulating and strengthening the plants by rich composts, fertilisers, and by admitting plenty of light. Plants with forced variegation require re-potting at long intervals, and always in a soil poor in nutritive qualities. In the former class are Caladiums, Coleus, Aphelandra, Dracena (with some exceptions); in the second Cyperus alternifolius variegatus, Coffea arabica variegata, and, finally, all plants in which branches which are "sports" show the same characteristics when grafted or otherwise multiplied. *Louis Gentil.*

COLONIAL NOTES.

DOUBLE PSEUDO-BULB OF GONGORA MACULATA.

The illustration (fig. 50) shows a curious variation in a plant of *Gongora maculata* of the typical form, yellow in colour and fragrant, showing a new pseudo-bulb growing on the upper part of an old one, and the flower-spike issuing from the apex instead of from the base of the new growth. This plant belongs to a gentleman connected with the sugar industry. I have in my collection a pure white *Gongora*, which I believe is an albino of *G. maculata*. It is not the straw-white type, which has been described as indigenous to this island, but a pure white flower with a greenish tint in the mesochil, and altogether a very desirable variety of *Gongora*. *Thomas J. Potter, Trinidad.*

CENTROSEMA PLUMIERI, *Benth.* (THE SNAKE FLOWER.)

The boys about the district of the Botanic Garden, Grenada, call this climber the "Snake Flower," from a whistling noise made through the staminal tube after the style is pulled out and blown into by placing the tube in the mouth, and this is supposed to imitate the "whistle" of a snake. The standard, large and erect, is 2 inches wide, and nearly as long, giving in outline all but a perfect circle. Externally it is clothed with soft down. Inside there is a broad belt of a pinkish-purple hue, nearly divided in two halves by two yellowish streaks; the rest of the standard is of a whitish colour. The upper portions of the keel and wings are of a lighter shade of purple, with the remaining parts white. Upon the outside of the keel and wings are a number of very small hooks, which, when touched, cling to the hand and impart a sticky feeling. The leaves are made up of three leaflets, and, like the flowers, are borne upon short stalks. The plant prefers shady places, especially along banks, where the flowers oftentimes lie expanded upon the ground, but yet attached to the twining stems. The Pea-shaped flowers are odoriferous, attractive, and well suited for horticultural attention. It is a common Grenadan plant, in the lowland districts. Seeds are freely produced.

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CENTROSEMA PUBESCENS, *Benth.*

This *Centrosema* flowers much more freely than *C. Plumieri*, and differs in other respects also, as for instance, it inhabits more exposed places, and does well growing in the full blaze of the tropical sun, and ascends higher in climbing than does *C. Plumieri*. It is very common in the lowlands, growing alike upon fences and vegetation; in fact, it is a pest in some parts of the Botanic Garden. The flowers are not so large as those of *C. Plumieri*, nor are they so distinctly marked. In colour they are either creamy-white, and marked in the centre of the semi-globose standard with purplish lines, or sometimes are of a light purple with darker line-markings on either side of a broader whitish line in the central portion of the standard. Like the above-mentioned, there are numbers of minute hooked hairs, which also cling to the hand when the flowers are handled, and which cause a similar sticky sensation. *W. E. Broadway, Grenada.*



FIG. 50.—GONGORA MACULATA.
Showing a new pseudo-bulb growing from the top of an old one.

TREES AND SHRUBS.

RHODODENDRONS IN EARLY MARCH.

Up to the time of writing, no season in recent years has been more favourable to the perfect development of early Rhododendrons out-of-doors than the present one. There are now at Kew some half-dozen species and varieties in full flower, which in beauty and showiness quite eclipse anything else among hardy trees and shrubs, and show how much can be done with these plants in favourable seasons. First among them in the brilliant effect it produces is *R. præcox*, of which there are some three-score bushes near King William's Temple, from 2 to 3 feet high, and literally covered with the lovely pale rose-purple flowers. This is of hybrid origin, and near it, and also in bloom, is one of its parents, the pretty Siberian *R. dauricum*, whose flowers are smaller, and of a deeper purple than *R. præcox*. In the same group also is *R. daphnoides* (a name, by the way, applied to two varieties); it has purple flowers, not unlike those of *R. dauricum*, but larger.

The remainder of the Rhododendrons in bloom belong to the Himalayan section, and are to be seen in The Dell, near the Bamboo Garden, where all the larger-growing species and varieties are cultivated. Owing to their numbers, the most noticeable are the old, well-known *Nobleanum* and *altacerense*, both hybrids owning *R. arboreum* as one of the parents.

They are now furnished abundantly with fully or partially-opened trusses of rosy-scarlet blossom. These old hybrids have fallen somewhat into disrepute, owing to their flowers being so frequently cut off by frost; but if only once in five years we get a display like that of the present season (and with a carefully-selected position it will come much oftener than that), they are worth representation—in a small way, at any rate.

Perhaps the most striking, not only of Rhododendrons, but of all shrubs now in flower, is *R. fulgens*, which in its true form is very rare. This has compact rounded trusses, 3 or 4 inches across, of closely-packed flowers of the richest and brightest blood-red. Completing the tale comes *R. Thomsoni*, a species not far behind *R. fulgens* in depth of colour, but quite distinct. It has loose trusses of more or less drooping flowers, the latter larger than those of *R. fulgens*, and of a slightly paler shade.

STACHYRUS PRÆCOX.

This curious Japanese shrub is not only one of considerable interest botanically, but is also deserving of note as one of the earliest-flowering of hardy shrubs. At Kew there is a specimen now very prettily in bloom, that has been grown outside for many years past. Like several Japanese shrubs reputed tender, this withstood the winter of 1894-5 with less injury than many of our native shrubs. The species has, however, in previous years been killed. Its flowers are of a pretty greenish-white, $\frac{1}{2}$ -inch across and cup-shaped, and they are produced in racemes about 2 inches long, which hang at intervals of 1 inch in a straight row from last year's branches. This shrub has been figured in the *Botanical Magazine* (t. 6631), and is there shown with leaves as well as flowers, but the plate was prepared from a plant growing under glass. Out of doors there is as yet no sign of foliage, but its leaves, when developed, are 4 or 5 inches long, toothed, ovate-lanceolate, and taper to a long fine point. The fruits are borne in racemes like the flowers, each one about the size of a large pea, and covered with small warts. There are only two species of *Stachyurus* known, the other being *S. himalaicus*, a native of North India. *S. præcox* was first introduced from the mountains of Nagasaki, Japan, but has since been collected by Dr. Henry in Central China. The genus is an anomalous member of the *Camellia* family. *H. J. E.*

THE WEEK'S WORK.

THE HARDY FRUIT GARDEN.

B. H. W. WARD, Rayleigh, Essex.

Disbudding Wall-trees.—This is an important operation, and one which should not be entrusted to inexperienced men. The disbudder ought to have a definite idea of the results of dis-budding, and bear in mind the size and the shape of the tree, endeavouring to form a fruitful tree in a few years; and should also bear in mind that by the suppression of superfluous shoots and retention of the fittest, a maiden tree may, if the pruning-knife had not been previously applied to its shoots, be converted into a good-sized tree during the first year and that much can be done to change unshapely and ill-furnished trees into fairly symmetrical specimens by an adroit manipulation and distribution of the young growths, although it may require two or three years to achieve the result. The dis-budding of a tree should be performed at short intervals of time, so as to avoid checking growth to a dangerous extent. In thinning the young shoots which push from the base of shoots made the previous year, the lateral shoots should be selected at short intervals on either side the entire length of these shoots, the number of these laterals being determined at a later disbudding by the amount of wall-space available. In the case of maiden trees, almost every lateral growth should be employed in laying the foundation of the tree, rubbing out all fore-right or front buds as they appear. The foregoing remarks are especially meant to refer to Peach and Nectarine and other wall-trees, but are, nevertheless, applicable to other fruit trees which make much superfluous growth. The first trees to require attention in the direction indicated are the Alexander, Waterloo, Amsten Juno, and Hales' Early Peaches, Early Rivers, and Lord Napier Nectarines.

Frost-screens.—When the blossoms open, it is a matter of great importance to make the blinds quite secure, for should the weather become windy, much damage may be done to the trees by the flapping of the blinds, destroying the young shoots and buds on the lower branches. I have known instances of this undesirable state of things happening, not through the blinds having been blown from the fastenings during the night, but owing to the upright poles being let into the ground too close to the wall, and too wide apart. In these circumstances, two lines of long bean-sticks should be tied across the uprights to prevent mischief being done in this way.

Miscellaneous.—Prunings of all kinds should be raked up and burnt. Scrapers should be fixed at certain points of the fruit pots, the walls leading on to the gravel walks. Pieces of hoop-iron about 12 inches long let into oak stumps about 2 inches square, and from 18 to 24 inches long, according to the nature of the soil, make excellent scrapers.

THE KITCHEN GARDEN.

By W. PORR, Gardener, Highclere Castle, Newbury.

The Leek.—A sowing of Leek seed, to furnish the main crop of these plants, should be got in with as little delay as possible, sowing it in drills in the manner directed for Onions, or broadcast, as the plants need to be transplanted when sufficiently large. The Musselburgh variety is good for general use, but Sutton's Pritzaker or Dobbin's International are better for exhibition. Any part of last year's crop now in the ground may be lifted, and laid in on a shady border, so as to check the natural tendency of the plant after this date to run to seed. The ground thus cleared may be prepared for some other crop. Leeks sown under glass should be kept steadily growing in a temperature not exceeding 50° at night and 60° by day, with as much air as possible. Presently these plants may come into the cold pit or frame, and hardened gradually in readiness for planting out towards the middle of next month. Leeks should be grown in trenches prepared as for Celery, four or five rows being put in a trench, which may be got in readiness when opportunity offers. The trenches should be dug out to a depth of eighteen inches, and as wide as may be desired, and plenty of well-rotted, rich manure placed in the bottom and made firm afterwards, turning on the top of it nearly to the throw-out soil. On planting, let the roots go down as far as the manure, not pressing the soil hard round the plants; but leave the holes open till growth has somewhat advanced, when, by the repeated stirring of the surface with the hoe, the holes will gradually get filled.

Tomatoes.—To provide plants for putting out of doors, early in the month of May some seeds may be sown thinly in a shallow box or tray, in a forcing-pit, or stove with a minimum degree of warmth of 65°, and when germination has taken place, standing the pots in full sunlight and close to the glass. When the seedlings have a few true leaves, and before they become crowded in the seed pots, pot them singly in 60's, still keeping them well up to the light. Do not let Tomatoes get pot-bound before planting, but repeat them once or twice, and gradually harden off till they can be trusted in a cold frame, and afterwards in a sheltered position out of doors before planting them out.

Potatoes.—The first planting of early varieties of Potatoes should now be made on a warm border. The Ashleaf and the other varieties are favourites for early cropping, and if round ones are desired, Sutton's A1 is excellent. Plant, if possible, where some kind of protection can be afforded from frost, as the crop is not out of danger till before the middle of May. The sets should be planted about 6 inches deep, 20 inches from row to row, and 12 to 15 inches from plant to plant in the rows. On heavy cold soils a liberal allowance of leaf-soil should be worked into the staple or laid in the furrows with the sets; and on light soils a dressing of Beson's or other approved bone-manure may be sprinkled along the furrows when planted, and again before the sets are earthed up. Except in very mild parts of the country, it is yet too early to plant Potatoes in quantity, but much may be done now to ensure success by laying out the sets thinly as I advised some weeks ago, the sprouts will then get sturdy and not be easily broken off if carefully handled. Potatoes growing in pits and frames should be aired freely at all times when the weather is mild, not letting, however, cold air reach the tops, and always tilting the lights on the side from which the wind is not blowing. On bright mild days, the lights may be drawn off the frames for a few hours in the middle of the day. Coverings of mats and litter must still be made use of at night more or less, according to need.

THE FLOWER GARDEN.

By CHARLES HENRY, Gardener, Drogheda, Maidenhead.

The Planting of a Herbaceous Border.—Assuming that a new border is to be made, and that the soil has been liberally dressed with well decayed manure, and trenched some weeks ago, planting may begin when the state of the soil becomes workable. The border, if consisting of light soil, or it has been only recently trenched, should be made firm by tramping it evenly and regularly all over, and afterwards be levelled. No border of perennial plants looks well if the plants are arranged in straight lines and formal designs; rather should the various species and varieties be placed in small groups together, there being one or several such groups, according as the border is small or wide and long. Of course, the tallest plants should to a certain extent be placed in the middle of the border if it have two faces, or at the back if it have but one, dwarfier plants coming towards the front in each case; but this should not be too strictly adhered to, some of the plants of moderate height being grouped with dwarfier ones, so as to afford an undulating outline and do away with undue regularity. The perennial Snowdrops form extremely useful plants, that are in flower from June to late in the autumn. All of them possess flowers of a yellow hue as regards the rays, and a central disc of brown, orange, or black. Many of them are tall in growth, and some, owing to their growing by underground stolons, are apt to become somewhat of a nuisance. *Helianthus multiflorus*, 5 to 6 feet; *H. m. flore plenus*, 5 feet; *H. decapetalus*, 5 feet; *H. occidentalis*, 4 feet; *H. rigidus*, 3 to 4 feet; *H. latiflorus*, 4 feet; and *H. hyzalis*, a tall, late-flowering species with handsome Willow-like foliage, are all of them desirable Snowdrops. *Spiraea* forms a handsome class. *S. aruncus* is a noble subject when in bloom, and should not be omitted; it grows from 4 to 5 feet in stature. *S. astilboides*, a distinct and beautiful plant, is 2 feet high; *S. japonica*, a lower species, is a well-known plant. *S. filipendula flore-pleno* and *S. venusta*, with pretty rose-coloured flowers, are worthy of a place in any garden. *Anchusa italica*, a Borage-like plant, with flowers borne on strong spikes 4 to 5 feet in height, is an acquisition, no other subject equalling it in the intensity of the blue colour of its flowers; it flowers from June to September. Other tall-growing plants are *Delphiniums*, double and single, in variety; *Pilox decussata* hybrids, early and late-flowering; *Solidago virga aurea*, *S. altissima*, and *S. multi radiata*; *Boconia cordata*, a strong-growing plant with cordate foliage and spikes of rose-coloured flowers, striking and handsome; *Verbascum*, including the pretty *V. Chasii*, growing 5 to 6 feet high. Herbaceous Peonies planted in groups of three to five have a fine effect, and should be freely planted in both double and single-flowered varieties. *Baptisia australis* and *B. exaltata*, old-fashioned border plants, with blue pea-shaped flowers, the foliage, which is useful for arranging with various cut flowers; the plants in height from 2 to 4 feet. *Helenium autumnale* and *H. a. grandiflorum*, *Galega officinalis* and *G. o. alba*, *Dicentra* *Fraxinella* and *D. l. alba*, *Hesperis matronalis* f. pl., the old double white Rocket, so sweetly scented and useful for cutting; *Eryngium amethystinum*, *Rudbeckia speciosa*, and *R. purpurea*; *Campanula* in variety, *C. persicifolia* and *p. alba*, being two which should not be omitted. *Gypsophila pauciflora*, *Titimus*, *Asphodelus luteus* and *albus*, the early-flowering *Thalictrum aquilegifolium roseum*, *Inula glandulosa*, *Hemerocallis flava*, *H. kwano*, and the double-flowered variety. Early-flowering *Chrysanthemums*, *Doronicum plantaginifolium excelsum*, *Monarda didyma*, *Echinops Ritro* and *E. rubescens*, *Lychnis chalcedonica* and *Clematis erecta*. Plants for the front portion, growing from 6 inches to 2 feet in height, should include *Picotees*, *Pinks*, and *Cherubiums* in variety, *Orchis versicolor*, *Hyacinthus minilium*, *Heuchera angustata*, *Tiarella cordifolia*, *Pyrethrum* in variety, *Physelium capensis*, *Papaver nudicaule* in variety, and *P. orientale*; *Anemone apurina* and *japonica*, *Funkias*, *Iris* in great variety, German, English, and Spanish; *Achillea ptarmica*, d.-pl., and *The Pearl*; *Armerias*, *Aubrietias*, and *Gentians*, may be used for forming edgings to the borders. Bulbous subjects, as *Liliums* of various heights and colours may be dotted about in small groups, and *Montbretias*, *Alstroemerias*, and others. *Crocuses*, *Scillas*, and *Isidroids*, and other low-growing bulbous subjects, may be planted at a good distance towards the edge of the border, and after the foliage has died down, any bare spaces may be sown with annuals. The *Michaelmas Daisies* form a large class, and add to the autumn beauty of the garden. The following are a dozen good varieties:—*Harpur*

Crews, and *Purity*, white-flowered, 4 to 5 feet; *Robert Parker*, lavender-blue, 5 feet; *Nancy*, pale blue, 4 feet; *Amellus-bessarabicus*, 2 feet; *Lavaggio*, rose-coloured, 2½ feet; *acris*, 2 feet; *cordifolius* *Dianna*, 4 feet; *ericoides*, 3 feet; *Maia*, *Trasycanti*, 4 feet; *diffusus* *horizontalis*, 3 feet; *Redescantii*, late-flowering, small white, 4 feet.

Seeds to be Sown.—*Ricinus*, *Cannabis gigantea*, *Melanthus major*, *Nicotiana*, *Variegated Maize*, and *Solanum robustum*, for subtropical bedding. The *Ricinus* seeds should be sown simply in small pots, being bad subjects to transplant from seed-pans, any breakage of the young roots often causing the death of the seedlings, and when sown in single pots they may be watered, as without a check. *Verbena*, *Petunias*, *Pentstemons*, *Antirrhinums*, and *Lobelia speciosa* are other seeds that should also be sown if strong plants are desired by bedding-out time. Use pots or boxes filled with light soil, scattering the seeds thinly, and covering them more or less according to the size of the seeds; keep all seeds well shaded till germination takes place.

PLANTS UNDER GLASS.

By G. H. MARCOCK, Gardener, Luton Ho, Luton.

Tuberous-rooted Begonias.—As soon as time permits most or all of the tubers should be potted. My practice is to winter these in shallow boxes, with just sufficient soil over them to prevent shrivelling taking place; and select those for the first potting that are beginning to grow, leaving the others to be potted later, and thus lengthen the season during which the plants will flower. After potting, place the tubers near the glass, and keep them in a cool house having a genial temperature. Seedlings of this type of *Begonia* may now be pricked out in shallow, well-drained, earthenware pans or wooden boxes as soon as it is possible to handle them, using a pronged stick to lift them out of the soil, and a tiny dibber for setting them. These young plants should be kept near the roof-glass in a house or pit, and well shaded when the sun shines.

Violas.—Plants in frames should be copiously watered in the early morning when it is found that the soil is getting dry, choosing a bright day for doing the work. Do not leave decaying matter about the plants, or omit to ventilate freely, whenever there is no frost, even keeping doing so at night in mild weather. At this season efforts should be directed to maintaining a healthy stock of plants from which to propagate next month. Red spider giveth little trouble if the soil of the beds is kept in a moist condition, and the plants are occasionally syringed, especially the lower sides of the leaves, with a nozzle-syringe in the forenoon of warm days, and afterwards leaving off the frame-lights, so as to dissipate the over-abundant moisture before nightfall. If, despite those precautions, it should begin to spread over the plants, the XL All vapour should be employed against it.

General Hints.—Harrison's and the common Musk should be struck from cuttings or pieces of the roots, using for this purpose small 48's, and a mixture of sandy loam and leaf-soil, in equal proportions. *Salaginella denticulata* should be similarly dealt with, but putting, however, a handful of decayed dung below the soil, and affording plenty of drainage. The seed-vessels of plants of *Azalea indica* which have been forced should be removed without delay, and those plants of *Azalea* in need of re-potting, should be attended to after flowering is past, and growth has begun. The Indian *Azalea* likes as a rooting medium hard fibrous peat, half-decayed, in stack, and plenty of clean sharp sand, mixed with it the more if it be naturally deficient in sand, and broken sandstone may be also used for large plants. As drainage, it is better to use a few large crocks at the bottom of the pot, and above these a layer of finely-broken crocks, and over the latter nodules of peat of about the size of acorns. Loosen the roots at the sides of the ball, and if these are much matted together, shave off a thin slice all round; take out the old crocks if not much embedded, and let the ball be one-half to an inch, according to size of plant, lower than before. Fill in with small quantities of the soil, making it firm with a potting-stick each time before putting more soil into the pot. The potted, and the unpotted plants from which no bloom is expected, should be placed in a house having a night temperature of 60°, and a day temperature of 75°, closing it between 2 and 3 P.M., and generally keeping it moist, and the plants syringed in the morning at 7 A.M., and at closing-time. Allow the plants ample space, turning them round once a week; do not use any manure-water to plants that have been recently re-potted,

and only very weak guano-water once in eighteen days to those which have not been re-potted. It may here be said that Azaleas in an untrained or but little trained form are more handsome than those stiff, ungainly pyramids and balloons once so common; and if some of the branches grow downwards, and partially hide the pots, so much the better is the effect. It is sometimes necessary to cut Azaleas hard in; this however is better done in late autumn (and it should not be too severely done), as then the old wood will bristle with shoots when the plants are placed in heat at this season. The temperature should be a few degrees higher than that afforded the other part of the stock of these plants, and the house kept closer till a good break is obtained. It is at this season that grafting may be done, if desired, using as a stock *A. japonica* or *A. indica*, warm wood. Cut-backs, purple or other strong-growing varieties. Cut-backs, old plants may also be grafted with desired varieties, keeping them close and warm meanwhile. Prepare pots and pans for the seed-sowing of both stove and greenhouse annuals, and lose no time in getting the bulk of them sown. Afford weak dressings of artificial-manure to Carnations generally, and stake early those plants requiring support, fumigating them occasionally.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower, Burford, Dorset.

Calanthes.—The deciduous *Calanthes* will soon be in a condition to be re-potted, and a sufficient quantity of good fibrous loam should now be selected and laid in some convenient place, where it may become moderately warm before it is made use of. Loam is the principal soil needed by *Calanthes*, and cow-dung forms an excellent ingredient to mix with it. The latter should be prepared by exposure to the sun until it is quite dry, and afterwards rubbed through a fine meshed sieve, and turned over occasionally until needed for use. The position in which the plants will be placed after the re-potting should be made perfectly clean; the woodwork, rafters, &c., and the glass both inside and out, so that the plants may have a good clear light during their season of growth.

East Indian-house.—Such plants as *Renanea coccinea*, *R. storei*, *R. Warocqueana*, *Vanda Hookeriana*, *V. Miss Joachim*, *Vaillia aromatica*, *V. planifolia*, *V. Walkeriana*, and *V. Humboldtii*, having commenced to grow should be placed together at one end of the house, where they will obtain much sunlight. These species require their aerial roots to be moistened with a fine syringe several times a day. *Vanda teres*, given the same treatment, will grow and flower freely in the lower temperature of the Mexican house. *Vandas* of the *suavis* and *tricolor* section should now be given more water at the root; their flower-spikes being just discernible. Do not syringe them overhead, or the water will accumulate in the axils of the leaves, and cause decay. These handsome, tall-growing plants must be protected from strong sunshine, or they will lose their lowermost leaves.

Mexican division.—Plants of *Odotoglossum citrinum* are beginning to grow. No water need be afforded the plants before the growths are well advanced, but immediately the flower-spikes are seen afford them a thorough soaking at the root, and afterwards place them in a warm, moist atmosphere. Woodlice and slugs must be prevented from injuring the young spikes. It is also good practice to place beetle-poison on the plants to destroy cockroaches.

Cymbidiums.—Any plants of *C. eburneum*, *C. alpinum*, and *C. Mastersii*, that have just done blooming, or those of *C. Lowianum* that are producing young growths instead of flower-spikes, may be re-potted at this season if the need be. Also such species as *C. Toseyanum*, *C. Hookerianum*, *C. eximifolium*, *C. longifolium*, *C. chloranthum*, *C. elegans*, *C. giganteum*, and *C. sinense*. *Cymbidiums*, as a rule, do not take kindly to root disturbance, and it is not expedient to re-pot them unless there is good reason for it. When this is necessary, give the plants a good shift, that will suffice for several years. Give good drainage, and instead of elevating the plant above the rim of the pot, keep the soil at least half an inch below it. The compost should consist of one half good turfy loam, the other half peat and leaf-soil, to which may be added some small crocks and a little coarse silver sand. *Cymbidiums*, when in full growth, require plenty of moisture at the root and in the atmosphere. They should be grown in the coolest and most shady position in the intermediate house during the whole year. Plants of *C. Lowianum* and its distinct variety *viride* (onecolor), also the beautiful hybrids *C. eburneum-Lowianum*, and the reverse cross *C. Lowie-oburneum*, that are in bloom, should not

be disturbed until the spikes are out. *C. Devonianum*, which is now in bloom, is suited for basket culture. The prettier dwarf-spikes *C. bigirum* from Tennessee, at 6,000 feet elevation, should be given the warmest part of the Odontoglossum-house.

Cypripediums.—Plants of *C. Leeanum* × *C. insignis*, *C. Charlesworthii*, *C. villosum*, *C. Boxallii*, *C. venustum*, *C. Purpuratum*, *C. Sallierii-Hyeaenum* × *C. Schlimi*, *C. Amesianum* × *C. Williamsianum* × *C. raiosum* × *C. Arthurianum* × *C. Niobe* × *C. Statterianum* × &c., which may have become pot-bound, should now be re-potted. Afford liberal root-room, with plenty of drainage, and pot firmly with lumpy fibrous peat and a little sphagnum-moss. As all of these plants require abundance of water during their growing season, it is good practice to make the compost absolutely porous by mixing pieces of crock, tufa, or broken brick with it. These plants must be well shaded from strong sunlight at all times. A cool damp position in the intermediate-house is the best place for the above-mentioned species and hybrids at all seasons. At the present time the rare *C. insignis* *Sanderæ* and *C. i. Ernesti* appear to grow better if placed in a little more warmth than is recommended for the species. *C. superbium* (Veitchii) may be re-potted if necessary. It should be grown in the warmest part of the Cattleya-house, every care being taken not to expose it to the least ray of sunshine, or to occasionally mottled leaves will lose their freshness and colour.

FRUITS UNDER GLASS.

By F. HARRIS, Gardener, Eastnor Castle, Ledbury.

The Early Vinery.—If the Vines in this house were started on or about December 1, they will now be coming into flower, in which stage take a little more warmth, viz. 65° at night and 70°–75° by day, is required, or is beneficial; and the air should be kept somewhat dry, in order that the pollen may get better distributed. If the varieties are Black Hamburgh and Seedling, gentle tapping of the fruit at root about noonday will suffice to obtain a good set; but if Muscats are shortly expected to be in flower, it is a good practice to hold a shallow box under the bunches as they are tapped to catch the pollen as it falls, which, if kept perfectly dry, will be found to greatly assist Muscats to set freely if applied with a camel-hair pencil carefully drawn over the flowers. If plants are cultivated in the early house, they ought to be cleared out while the Vines are in flower, otherwise the set will probably be interfered with. If the hot-water pipes are furnished with evaporating-pans, the latter should be emptied for a few days, a slight damping of the paths and borders at closing time affording enough moisture. As soon as the flowers are all set, a good application of tepid water to the border inside will do much good; and the usual damping-down may be resumed, doing this twice or thrice daily, a careful manure-water being used for damping-down the last thing. When it can be seen which are the best bunches, reduce the number on a Vine to what it is believed it will bring to perfection without being unduly exhausted. There should have been a still earlier thinning of the number of the bunches, all those which it is apparent cannot make nice bunches being taken; this in most cases will benefit the Vines. At the second removal of the bunches they should be left evenly distributed over the whole of the Vines, not thickly here and sparsely there, as is sometimes observed; taking care to leave those which hang more conveniently for thinning, for if a good bunch be left in an awkward position, it is unavoidably spoiled somewhat by the operator rubbing or pricking the fruits. In thinning a bunch, or first thing to be sure of is that the shoot on which it grows is firmly tied to the trellis, or after the shoulders have been secured by ties, the weight of the growing bunch will bring the shoot lower, and render the tying useless or injurious. Tie the shoulders up as much as may be required before commencing to thin, or berries will be removed which should be retained. First cut out all the seedless berries, then thin the others to the required distance, remembering that early Grapes should not be as much thinned as the late ones. Use a short-forked stick to steady the bunch, and never allow the fingers to touch the berries. Start at the bottom of a bunch, and finish at the shoulder, leaving as many berries as possible in an upright position at the top, which will then close up compactly, and no stalk will be visible. The lateral shoots must be kept in check, so as not to crowd the trellis with growth and leaves, but encourage as much as possible those leaves behind and just in front of the bunches; and wherever practicable, allow a

shoot to run at the back of the vinery or elsewhere, by doing this the Vines are considerably helped at this part of their career.

Succession Vines.—The Vines in these vineries will now require their shoots to be tied in, their points stopped, &c. In tying these shoots, keep the points clear of the glass, and especially if the Vines are young ones, as if this operation be hastily performed, some of them are sure to be broken out, than which nothing is more annoying. Stop every shoot at the second joint beyond a bunch, or reserve the same number of joints if there be no bunches on the shoots. Do not be over-anxious to get the shoots quite down to the trellis all at once, as at this stage they are very brittle, whereas after flowering the wood is not so liable to snap.

Young Vines which, having been bent low down, are about to break into bud, should be secured in their places before the buds are far advanced. Should such Vines have broken irregularly, rub off one or two of the terminal breaks, which will probably have the effect of causing the backward buds to push. Any Vines which have not as yet broken should be well syringed two or three times a day.

Grape-room.—Where Grapes are still in the Grape-room, look them over frequently for bad berries, and see that the bottles in which they are placed are filled with water.

THE APIARY.

By EXETER.

Stock Short of Food.—The recent sunshine is bringing out the bees from every hive, and in most cases they are coming out in strong condition; but the very open weather we have had this winter has sadly reduced the stores in the hives, and the bees are dying from sheer want. This is most annoying, as it frequently involves the chilling of the brood. In a severe case it is best to remove the hive bodily indoors in the dusk of the evening, and place it in a warm room; take out a comb next the benumbed bees, and substitute a frame of comb the cells of which are well charged with warm syrup; then close the hive entrance, replace the quilts, and get above them several heated bricks. Very soon the bees will be found to be moving about, and when strong enough, the hive should be removed to its usual place. All dead and chilled brood must be taken from the hive; and it must be understood that in desperate cases of this sort, warm syrup must only be given, candy being no use whatever. When stores are short give them soft candy, as it is much too early to feed them with syrup, better wait till the month is out.

Old Combs.—It is useless to expect that all hives will come through the winter with bees about and doing well; a word then about old combs will be out of place. As soon as you find a stock is dead, close up the entrance to keep robber-bees away, and then, at the first opportunity, examine all the combs, and if they are dirty and old, place them in the melting-pot. If very bad, and there is the slightest suspicion of foul brood, burn them at once, rather than use them again, and contaminate the whole apiary; if, on the other hand, no cells of unhatched brood are found in stocks where the bees have perished, the combs may be used again with safety, and very useful they are to place upon to do. By carrying out these few directions all risks are reduced to a minimum.

Uniting in the Spring.—When examining hives if one lot is found to be very weak, and has a poor queen, do not hesitate to join it to the next, it will repay you in honey and swarms, whichever you require; but if you waste time in trying to feed up the weak stock, you will find all your time has been thrown away, and there are no good results.

Quilts.—Many who believe in non-porous quilts for the breeding season, must soon commence to suit their fancy. Some like porous, others non-porous, and again some like carpets. For my part, I have tried them all, and with young prolific bees, care and spring feedings, they will be found to come out well and ready for the honey season. Floor-boards should all be scraped clean of small pieces of wax, &c. This will save the bees a good deal of time and labour. A small piece of iron, bent at one end, is a very good tool to use for it. Where floor-boards are not nailed down, an old knife will quickly do the work.

Plants for Bees.—Now is the time to plant all sorts of flowers for bees, such as *Nasturtium*, *Sunflowers*, *Clover*, *Borage*, and a host of others suitable for them.

Hunts.—Do not put off getting in what is required, but order at once, as oftentimes the dealers sell out their best stock first, and if your orders are delayed, when your goods arrive you will be disappointed.

EDITORIAL NOTICES.

ADVERTISEMENTS should be sent to the PUBLISHER, etters for Publication, as well as specimens and plants for naming, should be addressed to the EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of this paper, sent us early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith. The Editor does not undertake to pay for any contributions, or to return unused communications or illustrations, unless by special arrangement.

Local News.—Correspondents will greatly oblige by sending to the Editor early intelligence local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

Illustrations.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, &c.; but he cannot be responsible for loss or injury.

Newspapers.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

APPOINTMENTS FOR THE ENSUING WEEK.

TURSDAY, MAR. 13.—Royal Botanic Society Meeting.
WEDNESDAY, MAR. 17.—Devon and Exeter Gardeners' Society's Spring Show.

THURSDAY, MAR. 18.—Linnean Society Meeting.
Spring Show at Edgworth's Botanic Gardens (two days).

SALES.

MONDAY, MAR. 15.—Greenhouse Plants and Ferns, Herbaceous Plants, and Hardy Border Plants in variety, at Protheroe & Morris's Rooms.

TUESDAY, MAR. 16.—Cannas, Begonias, Carnations, Aspleniums, Anemones, &c., at Protheroe & Morris's Rooms.

WEDNESDAY, MAR. 17.—275 Cases of Japanese Lilies, Azaleas, Roses, Fuchs, Ornamental Plants, Edulis, &c., at Protheroe & Morris's Rooms.
Sale of Plants, Orchids, Greenhouses, &c., at the Durban Down Nurseries, Clifton, Bristol, by order of Messrs. Gurnsey & Co., by Protheroe & Morris (two days).

Great Sale of Roses, Plants, Shrubs, Palms, Bulbs, Lilies, &c., at Stevens's Rooms.

Hardy Perennials, Ranunculus, Iris, Roses, &c.; also 1000 Cattleya Mendelii and other Orchids, at Protheroe & Morris's Rooms.

Special Sale of Border Plants and Bulbs, at Stevens's Rooms.

FRIDAY, MAR. 19.—Established and Imported Orchids at Protheroe & Morris's Rooms.

AVERAGE TEMPERATURE for the ensuing week, deduced from Observations of Forty-three years, at Chiswick.—42° 7'.

ACTUAL TEMPERATURES:—LONDON.—March 10: Max., 52°; Min., 41°
PROVING.—March 10 (6 P.M.): Max., 47°; Scilly; Min., 39°; Malin Head.

The genesis and maintenance of variations are matters which astonish the laity, and confound the experts. How, for instance, can we account for the production of crested Cyclamens, which first came under our notice in 1856? (See *Gardeners' Chronicle*, April 25, p. 536, for figure, &c.). The productions in question are enations or out-growths from the petals, such as we have often met with in Chinese Primroses, in double Daffodils, Gloxinias, and other plants, and which are, in fact, homologous with similar out-growths from the leaves of the Kails. In many of these cases, the relative position, or, as botanists call it, the "orientation" of the elements of the fibrous cords or vascular bundles is reversed; thus, in an ordinary petal, the bast-cells (phloem) are below; the wood-cells (xylem) above, ^a/_b; while in the appendage the position of the two elements is reversed, ^b/_a. If we look on the leaf or petal as representing one-half of an axis,

then, this new production may be taken to represent the other half thus: $\left. \begin{matrix} b \\ w \\ b \end{matrix} \right\}$; and, if we

further suppose the edges that are in general free and detached to be united, we then get a hollow cylinder or tube, instances of which are very common. So far, then, there is nothing absolutely new about these Cyclamens. In the first instance, we may infer that their production is due to hypertrophy, or over-growth, caused by excessive feeding; but that is only a guess, and does not help us to understand the spread and increased development of the peculiarity. Messrs. Low & Co., as we know, exhibited some specimens of this variety at a recent meeting of the Royal Horticultural Society, and have subsequently displayed it in Belgium and in France. And now we learn from the *Revue Horticole* that M. ETIENNE NARBOUTON, a gardener at Maisons-Laffitte (Seine-et-Oise), France, has had a similar Cyclamen, but of a red colour, for the last three years, and that the characteristics are reproduced from seed. In this case, then, we have had a variation, as it were, formed beneath our eyes, and one, moreover, which in so far resembles a species that its characteristics are reproduced from seed.

If these crested Cyclamens should take the public taste, we may expect to see great developments in this direction; but if, as is quite as likely as not, they fail to attract attention, they will disappear and be no more seen until what we, in our ignorance, call accident once more brings them to light.

It is curious to note that all the now numerous forms of Cyclamen are derivatives from one species, *C. persicum*. In many of these cases the changes arise from hybridisation of two or, eventually, of several species, as in tuberous Begonias; but the Persian Cyclamen has, we believe, not been crossed with any other species, or, if it has been, the results are not known to us. The amount of variation of which an uncrossed species is capable is well illustrated by the Chinese Primrose, whose history was detailed in these pages when the wild plant from Yehang was first brought into cultivation in this country.

DAPHNE INDICA RUBRA AT BERKELEY CASTLE.—Daphnes of all species are plants of comparatively slow growth and moderate size under cultivation. The specimen of *D. indica rubra* which fig. 51 shows is the more remarkable, seeing that this plant and others in the same house measured 6 feet in height and breadth. These plants were struck from cuttings about sixteen years ago, and they are planted in a border. The plant succeeds in a mixture of two parts of unctuous loam, one of fibrous peat, and the same proportion of sharp sand. *D. i. var. rubra* differs in regard to its flowers from *D. i. alba* by the former having a red-coloured under-surface, and *D. i. rubra* is a better doer under pot-culture than the latter variety, and is not so much subject to red-spider. The conditions under which Daphnes succeed under glass are similar to those found to suit the Camellia. We are indebted to the kindness of Mr. SNOBE, the gardener at Berkeley Castle, for the photograph from which this illustration was taken.

KEW.—The furnishing of the Alpine house has just commenced, and among the plants which may now be seen there, are *Morimia hypogaea*, a small tufted crucifer, with a rosette of deep green, deeply pinnately divided leaves, from the centre of which uprises a flower-stalk 2 to 4 inches high, with two to five bright yellow flowers. The plant is very striking in appearance, though, as yet, little known out of

botanic gardens. *Saxifraga apiculata* shows a mass of yellow flowers—this is the species originally called *luteo-purpurea*. *S. Durseriana* is very beautiful in its profusion of white flowers, and *S. Boydii alba* is scarcely inferior; *Fritillaria citrina* is well represented, and *Shortia galicifolia* gives hope for the future. *Crocus Malyi*, *Nocca stylosa*, may also be noted in this house, which in another week probably will be replete with beauty and interest, as it generally is at this season. On the rockery, *Saxifraga sancta* (yellow), *Anemone* (*Hepatica*) *angulosa*, and the Pyrenean form of *Saxifraga oppositifolia* are very attractive. The *Heliolebas* are coming on in force, *Daphne Blagayana* is in full bloom, and things are coming on so rapidly that the plant-lover will soon experience the usual impression that time will not permit him to study the floral detail presented to him. The turf is speckled with blue from the thousands of *Chionodoxa* of various kinds. Snowdrops, which have been even more numerous, are now passed out of flower.

The furnishing of a conservatory or greenhouse often forms the subject of an enquiry in these columns. Whenever practicable, we recommend the enquirer to visit the show-house at Kew. The house No. 4 is kept gay throughout the year with ordinary plants, and very often the visitor may have in addition the good fortune to see plants which he could hardly see elsewhere. This display of rare or new plants is one for which the authorities cannot be too highly commended, and it is one that need in no way interfere with the requirements of the populace. The fine plants in pots of *Saxifraga Stracheyi*, for instance, form an excellent object-lesson for those who have to fill conservatories or window cases. Very showy and better known are the *Cinerarias*, Chinese *Primulas*, *Cyclamens*, *Hyanthis*, *Tulips*, *Azaleas*, *Cliveias*, *Asacias*, *Narcissus*, *Eriostemon*, *Begonia semperflorens*. The *Camellias* which were planted out, are over, but *Cestrum fasciculatum* is still in flower, and, indeed, it would require a catalogue of some length to include all that may be seen in the show-house.

THE KEW GUILD.—Owing to a printer's error, the invested fund of this guild was stated in our last issue to be £10. It should have read £100.

LINNEAN SOCIETY.—On the occasion of the evening meeting, to be held on Thursday, March 18, at 8 P.M., the following papers will be read:—1. "Further Observations on *Stipules*," by the Right Hon. Sir JOHN LUBBOCK, Bart., M.P., P.C., F.R.S., &c. 2. "On the Origin of transfusion-tissue in the leaves of *Gymnospermous Plants*," by Mr. W. C. WORSDELL.

THE MIDLAND CARNATION AND PICOTEE SOCIETY.—We have received the sixth annual report of this society, which includes a full list of awards, and a list of the subscribers and balance-sheet for 1896. The show held on Friday and Saturday, July 24 and 25, was considered, from the exhibitors' point of view, a success, the competition in most of the classes being stronger than on any previous occasion. The society maintains its reputation, and new members have joined it in considerable numbers. The balance this year not being so large as usual, the support hitherto given each year to the Royal Gardeners' Benevolent Institution and to the Royal Gardeners' Orphan Fund is omitted, but the committee hope to continue their support in the future. The receipts for the year 1896, including balance from the previous year of £40 2s. 4d., amounted to £225 17s. 2d., and the expenditure to £188 12s. 9d., which leaves a balance to the credit of the society of £37 4s. 5d.

PRESENTATION.—The Duke and Duchess of PORTLAND have presented Mr. JORDAN, the local-gardener at Impney Hall, Droitwich, with a valuable silver tea-pot, bearing the following inscription:—"Presented to Mr. F. JORDAN by the Duke and Duchess of PORTLAND, on leaving Welbeck, September 18, 1896." The above is a much-prized and valuable addition to the numerous presents Mr. JORDAN received on leaving Welbeck to take charge of the gardens at Impney.



FIG. 51.—*DAPHNE INDICA RUBRA*, IN THE GARDENS AT BERKELEY CASTLE, GLOUCESTERSHIRE. (SER. P. 172.)

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THE NATIONAL AURICULA AND PRIMULA SOCIETY.—We have before us the twentieth annual report of the Southern Section of this Society, from which is gathered the fact that the membership has received a further increase. A notable feature of the last show was the exhibit of the Rev. F. D. HORNER, consisting of twelve show varieties of Auriculas, ten being of his own raising, and two of Mr. BEN. SIMONITE'S, one only of the twelve, viz., Heatherbell, being in commerce. The premier Auricula, Mrs. Howwood, raised by the late S. BARLOW, is a remarkable green-edged flower, and a welcome addition to its class. The committee have, with much regret, to report the resignation of the honorary secretaryship by Mr. J. DOUGLAS, which he has held for upwards of twenty-one years. The annual exhibition of the Society will be held in The Drill Hall, James Street, Victoria Street, S.W., on April 13, under the auspices of, and at the same time as the meeting of the Royal Horticultural Society. The account of receipts and expenditures for the year 1896 shows—receipts, £82 7s.; expenditure, £71 14s. 9d.; and a balance in hand of £10 12s. 3d.

POTATOS.—At the last meeting of the Farmers' Club, Mr. ARTHUR SUTTON delivered a lecture comprising 1, The Botanical description; 2, the Introduction of the Potato into Europe; 3, Deterioration and Disease; 4, Disease Prevention—a, by spraying; b, by raising seedlings; 5, Species and Varieties; 6, Modern Introductions; 7, Cultivation and Reports &c. &c. Under the latter head many agricultural and statistical details were given. The lectures were similar to those already reported at the Royal Horticultural Society and in Dublin, and was copiously illustrated with lantern-slides.

TRURO DAFFODIL SHOW.—The unusual forwardness of vegetation, due to the mild weather, is rendering necessary the alteration of the dates of spring flower shows. Mr. J. BOSCAWEN, Hon. Secretary of the Truro Society, desires us to state that the date of that bulb show is now fixed for March 16 and 17.

ROYAL BOTANIC SOCIETY.—At a meeting of this Society, held on Saturday, February 27, Mr. JOHN BIRKETT, F.L.S., in the chair, the Duke of BEDFORD, Sir G. HAMOND CREME, Bt., and nineteen others, were elected Fellows. A paper was read by Mr. MARTINDALE, calling attention to the great desirability of establishing in London an institution for the purpose of teaching botany, similar to those in existence on the continent, and proposing that the Council should take charge of the scheme, and utilise a portion of their ground for the erection of the necessary buildings. From its central position, and the fact of all the requisite material for study being at hand in a living condition, no other site in or near London would be so suitable for the purpose. The great fault of the present system of botanical teaching in England outside the medical schools and universities was, that too much attention was given to botany, solely with the object of enabling students to pass examinations, while economic and physiological botany was scarcely touched upon. If a young German were desirous of emigrating, previous to doing so he could attend a short course at one of the institutions at home, and learn all that would be of most use to him about the grasses, fruits, and vegetable products of the country he proposed to settle in; but in England there is no such means of acquiring knowledge of this kind, and it was for the purpose of supplying such a deficiency that the establishment of the institute is proposed. Among those present who gave the scheme their hearty support, were Professor OLIVER, of University College; Mr. D. H. SCOTT, of Kew; Professor HENSLOW, Professor GREENISH, Mr. M. CARTER, Mr. E. M. HOLMES of the Pharmaceutical Society, and many other eminent scientists.

THE NATIONAL CARNATION AND PICOTEÉ SOCIETY.—The committee of this Society, reviewing its position during the past year, report that it has more than maintained its hold in the estimation of

the public, in evidence of which is the fact of an accession of eighty new members during the year, raising the total to 300. The date of the show this year will not be fixed till a fairly trustworthy opinion can be formed as to the probable date of the maturity of the blooms; and the committee propose to hold a meeting in June, and as soon after such meeting, advise the members by circular, and the public by advertisement, of the date of the exhibition; which will be held at the Royal Botanic Gardens, Regent's Park. The committee lose with regret Mr. James Douglas, who for a period of twenty-one years has occupied the position of honorary secretary, during which he has rendered excellent and valuable service to the society. Mr. T. E. HURWOOD has kindly consented for the present to act in the capacity of honorary secretary. The income of the Society for the past year amounted, together with a balance of £195 19s. 1½d. from the previous year, to the sum of £471 7s. 7d., and the expenditure to £233 6s. 4d., leaving a balance of about £238.

ISLE OF WIGHT.—A correspondent in the island remarks that the last month was the mildest experienced for the past ten years, the nights being particularly warm. As a consequence, vegetation is unusually forward, and blossoms of Primroses, Violets, Anemones, and Anemones are plentiful in gardens. Butterflies and moths could be seen on the wing, and the hum of bees was heard; but a severe check came with the first days of March, and a furious gale from the south by south-west occasioned much damage to plants, trees, and buildings all over the island.

TASMANIAN FRUIT SEASON.—The Managing Directors of the Peninsula and Oriental Steam Navigation Company obligingly send us the following:—"We have a wire of the following shipments of fruit: Per *China*, due here, about April 3, 6600 boxes; per Orient Company's *Oraba*, 6800 boxes; per *Massilia*, due here about April 20, 24,000 boxes."

COELOGYNE CRISTATA.—We have received during the past week, and by the same post, two photographs from gardeners, each representing successful cultivation of this pretty and useful species of Orchid. One of these comes from Mr. J. W. BARKS, Alderbrook Gardens, Cranleigh, Guildford, Surrey, and illustrates six fine, well-flowered plants. The other is from Mr. W. WEMMAN, Hickleton Gardens, Doncaster. This shows a group of specimen plants in praiseworthy condition, that have been grown from small pieces by the present gardener. We regret that, having already figured many such instances in the case of *Coeologyne*, it is impossible for us to reproduce the photographs now sent.

CYDER AND PERRY FRUITS.—The season for grafting fruit trees is close at hand, and it would be well if those in suitable districts in the south who have Apple and Pear-stocks 1-yr. planted would send to the Herefordshire, Somersetshire, and Devonshire nurserymen and farmers interested in the manufacture of these once national beverages for scions of the best varieties of each. We append the names of some of these, and doubtless the trade would furnish others equally desirable—

PEARS: Parsonage, Taynton Squash, Thorn, White Squash, Moorcroft, as early varieties; Barland, Black Huffcap, Holmer, Winalus Longland, White Longland, Yellow Huffcap, and Oldfield, as mid-season varieties; and Aylton Red, Butt, Cappy, Rock Red Pear, and Thurston Red, as late ones.

APPLES: *Herefordshire*.—Dymock Red, Eggleton Styre, Forest Styre, Foxwhelp, Gennet Moyle, Hagloe Crab, Kingstone Black, and Red Splash. *Devonshire*.—Tom Pitt, Red Cluster, Soldier, Northwood, Pound Apple, Ponsford, and Sweet Elford. *Somersetshire*.—Black Hereford, Hangdown, Cadbury, Lanyer Bitter Sweet, Red Cluster, Sweet Ruinette, &c. In the case of Apple and Pear-wilding stocks planted this year, and therefore unfit for grafting, budding should be carried out late in July, and in

August and September, obtaining the shoots on which are the buds from the sources indicated. These shoots, if carefully wrapped in damp moss covered by waterproof paper, could be safely sent in small numbers through the post. The west country farmers run up their Crab and Pear-stocks to a height of 6 to 8 feet, and graft at that height, which is doubtless of advantage in the case of varieties which make weak growth, or which seldom make sturdy stems; but it is not essential, as almost every kind of cyder Apple and perry Pear will make in time, if not denuded of its lateral shoots too severely, a stout stem when grafted or budded low down. The Arbor Day, inaugurated by Mr. RAOUL CLYFFE COOKE at Eynsford on Saturday, February 27, should set all holders of land thinking, however small their holding may be, in what manner they may obtain a stock of dessert, culinary, or cyder and perry varieties of Apples, Pears, &c.

ENTRIES OF PLANTS AT THE ROYAL HORTICULTURAL SOCIETY.—Constant complaints having been made to the Council to the effect that the business of each of the committees has lately been disorganised, on account of the disregard of the Society's rules and regulations, the Council hereby direct, that—1. The rules whereby all objects presented for certificate must be entered with the clerks at the table before 11.30 A.M., be in future rigidly enforced. And that—2. All such objects must be placed on the special table provided for plants for certificate. After the plants have been presented to the committees, they can, if the exhibitors wish it, be incorporated in their groups.

ENGLISH ORCHARDS.

(Continued from p. 151.)

WEST OF ENGLAND.—THE four great fruit-producing counties in the West of England are Devonshire, Hereford, Somerset, and Worcestershire, and it is in these that the greatest need for improvement exists. These four counties contain about 675 acres of orchards, and, notwithstanding the highly favourable character of both soil and climate, and the facilities that exist for the disposal of the produce, not one-fourth of this large area gives an adequate return. Here we find not only trees that are unproductive through age, starvation, or some other form of inefficient management, but thousands that in consequence of the inferiority of the varieties, bear fruit that is utterly useless, excepting it be to make bad cider. In the formation of many of the Apple and Pear Orchards, trees that had sprung from the pips distributed through the medium of the refuse from the cider or perry-press were planted, and these have remained until the present day giving neither pleasure nor profit to their owners, and without anything being done to improve them by the simple process of grafting. With regard to the capabilities of Hereford as a fruit-producing county, we are told that "almost every holding in Herefordshire could produce magnificent fruit for home use or for supplying the market if the trees were given proper attention, and the right varieties grown. The soil is naturally rich and fertile, resting on the old red sandstone in many parts of the county, and the colour of the fruit when ripe is very bright and striking." The manner in which the great natural advantages of the county are in too many instances unutilised may be gathered from the following statement in reference to the Leominster side of the county:—"With the exception of gardeners, no one appears to trouble much about the orchards, except when the fattog-troop needs replenishing. Then the farmer turns his attention to his orchards, and the dead wood is cut out of the trees, with also, if may be, many of the large limbs. I never saw worse mutilated trees than those met with in one or two orchards. . . . Canker, American blight, lichen, dead wood, and general carelessness are only too apparent on almost every side. Young trees that should be producing full crops of the largest Apples may be seen in a dying condition, through sheep or piggy horses having gnawed off all the bark on the trunk. The tree-guards are in many instances of the most primitive description, and practically worthless. Hundreds of young trees are literally choked by a mass of thorns or small branches of forest trees tied up in a bundle round the stems. This rough-and-ready method certainly answers the purpose of protecting the young trees from sheep, but in a year or two Nettles, Thistles, and other noxious rubbish grow up among the young trees, and, before being cleared almost as high as the trees, thereby excluding all moisture from the roots."

With regard to the orchards in another part of the county, it is stated "I found on measurement trees only 15 feet apart, and, as a matter of course, the best apple trees were interwoven with each other. When the tops get into this very congested state, all the energies natural to fruit trees hold high revel, devouring foliage, blooms, and

even the points of the shoots, until all the food at hand is exhausted. These wasted orchards are a standing menace to other growers who exercise proper care with their trees, as they are practically a nursery for all sorts of injurious pests, which spread and attack other orchards in the vicinity."

As Haffner has long been known for its cider, it follows as a matter of course that it should be a standing menace to other growers who exercise proper care with their trees, as they are practically a nursery for all sorts of injurious pests, which spread and attack other orchards in the vicinity."

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Devonshire has the largest acreage under orchards of the English counties, and consequently the report on the present aspect of fruit culture in this shire has special interest, and the excuse will be necessary for the long quotations I shall make. We are told with regard to the capabilities of the county:—"By way of showing what it is possible to do in Devon, I give a few figures supplied by Mr. Snow, who has an orchard only one acre in extent, but which has been thoroughly well managed from the time it was first planted. In 1895 Mr. Snow grew eight fruit to make 51 bushels of cider, which he sold at the rate of 32s. per bushel. In addition he gathered and sold 500 score pounds of Apples, which fetched, on an average, 1s. per score. Good crops were again had in 1894, and 123 bushels of cider were made, this fetching 20s. per bushel, while no less than 550 score lb. of Apples were marketed, this time at 12s. per score. If the old notions to the effect that some varieties of Apples only bear fruit once in every two or three years were true, then Mr. Snow ought to have had very few fruit in 1894, and not a very heavy crop in 1895. As it happens the trees are not in a crowded state, nor individually in want of thinning out, nor of being cleared of roots, nor in need of assistance at the roots, and, as a consequence, were fully equal to bearing an even heavier crop. Twenty-nine bushels of cider were made, and six hundred and fifty score pounds of Apples marketed." The way in which these capabilities have been taken advantage of may be gathered from this excerpt: "Devon is certainly famous for its orchards, and is noted for the excellence of much of the cider that is made in the county; but the orchards will not, as a rule, bear critical examination, nor is cider sufficiently in demand to justify such a waste of space in growing Apples for its manufacture. As a matter of fact, Devonshire, compared with other counties, has made little or no progress of late years, and there are hundreds of orchards in that county that are a little short of disgrace to those who own or rent them. Here and there are signs of improvement taking place, and it is hoped the capable instructors engaged by the technical education committees will not expend their energies in vain. The majority of the best of growers are in the county, who too often are the worst of gardeners and the poorest of fruit growers, and they cannot be induced to improve on their methods. All the while the trees remain standing that is sufficient for them, and not a few that have blown over—for they get some hardy rains in Devon—are left where they are as long as life remains in them, or the cattle that roam in the orchards leave them fairly intact."

(To be continued.)

NEW OR NOTEWORTHY PLANTS.

ASPHODELINE TAURICA (*Kuhn.*). (See fig. 52.)

This fine species from Asia Minor has a robust stem, which is densely provided with erect linear leaves. It ends into a long densely-flowering cylindrical raceme, with large ovate, or ovate-oblong acute or cuspidate pure white bracts, which enclose the flowers. The peduncles are short, articulate in the middle. The white perianth has linear spatulate leaves, with a brownish middle nerve. The filaments are very unequal, the longer ones have the anthers three times larger than those of the shorter ones. The plant grows in stony places of the sub-alpine and alpine region of Asia Minor, from where it was imported last year by Mr. Siehe, of Merina. *L. D.*

HOME CORRESPONDENCE.

SWEET PEAS.—In the *Gardeners' Chronicle* for February 13, p. 114, in an article on Holtzberg's drawings he states—Sweet Peas are exceedingly small. I presume this remark refers to the two varieties of Lateirus on p. 40 in the *Album*. The two drawings in the centre are doubtless these in question, as figs. 1 and 4 are forms of Lotus. I hardly think figs. 2 and 3 are intended for Sweet Peas, as the plants in both cases are entirely different to any Sweet Pea I have yet seen. But I think fig. 2 is intended for *Lathyrus sativus*, introduced 1640 (Don); *vide* also *Nicholas' Diet.*, art. *Lathyrus*. I enclose a dried specimen. The flowers are bluish-white, as in Holtzberg. This plant is cultivated for forage in Western and Southern France, and other places on the Continent. I have not been able to clearly identify fig. 3, but presume it may be meant for *Lathyrus tuberosus*; a specimen of this is enclosed herewith. There is a small-flowered red, which I have often seen near the Basses Alpes, but it is one-flowered, and the keel is not pure white. I am sure your correspondent will be glad to have his attention directed to this. The second earliest coloured illustration of Sweet Peas I have been able to find is in Knapp's work. Can you help me to find something earlier? In *Gerarde's Historie of Plants*, 1597, I find under *Lathyrus* minor latifolius, variety 3, the following:—"The stalks, leaves, and flowers of this, are like those of the precedent, but the flowers are of a reddish-purple colour; the pods are lesser than those of the former, and in them are contained lesser, harder, and rounder seeds, of a dark or blackish hue. This grows not wild with us, but is sometimes sown in gardens, where it flowers in June and July." Can you help me to the modern name of this pea? On the following page in the work, the number 3 is affixed to an engraving of *Lathyrus angustifolius* for, purp., or purple-flowered Chickling Vetch. The engraving shows a plant very similar to the Sweet Pea, with leaves slightly elongated. Respecting coloured illustration of Sweet Pea, I had overlooked the fact that a figure of the purple variety appears in that charming set of engravings, designed by Peter Casteels, engraved by H. Fletcher, from the collection of Robert Furber, Gardener at Kenington, 1730—"Hunts from the Dargett Rigand, 1730." June plate, fig. 33; the brick red shading is obviously an artistic effect. A perfect copy of this work is to be seen in the reading-room of the British Museum. *D.*

LAPAGERIA ROSEA AND L. R. ALBA GROWING IN THE OPEN.—I have witnessed various kinds of treatment of *Lapageria rosea* and its variety under artificial heat, and in the open with due precaution taken against injury by the sun's rays, but I have never seen such luxuriant plants as those growing in the garden belonging to—Robin, Esq., of Bishops Leighton, Devon. They are planted against a wall facing due east, with little more protection afforded them in winter than a frame light. The plants consisted of the red-flowered form, *rosea*, and its white variety, and large untragedious trees bear at hand cast a sombreshade over the wall, and render the surroundings somewhat damp. Under these conditions, the plants, as I was told, flower profusely, although the local conditions are not very favourable, as was apparent from the scrubby appearance of the hedges and trees on the seaward side. *T. Brockbank, 39, Hoopern Street, Exeter.*

DAMAGE BY THE STORM AT WEST PARK.—The heavy gales of the 3rd and 4th inst. occasioned a great deal of injury to the trees in the grounds at West Park, Salisbury, amounting from 200 to 300 of them, and seriously damaging many more; some of the fine specimens of Cedar and Pinus having suffered greatly, and Scots Firs of 80 to 110 feet in height were blown down, and the tops of others broken off. *G. Fulford, West Park Gardens, Wills.*

THE AMERICAN APPLE CROP OF 1896.—I have been favoured by a correspondent in Pennsylvania with the following particulars of the Apple crop for 1896. It was fully 50 per cent. greater than that of 1895, indeed, the heaviest they have had for many years. The average price paid for selected Apples, without barrel, was 50 cents (about 2s.) per three bushels, which is the quantity a barrel holds. The barrels cost, delivered at the orchards, about 25

cents each, therefore the price paid at the orchards was from 75 to 80 cents per barrel for choice fruit (75 cents = 3s.). The price paid for picking is 2 cents per bushel. In a young orchard where the trees were low and the crop heavy, a good picker might pick 100 bushels in a day. Choice fruit carried by boat 120 miles to Memphis brought a dollar-and-a-half per barrel. At Cincinnati, Ohio, and Louisville they were a drug in the market, and dealers disposed of them at any price they could obtain. All cellars and buildings along the river Ohio were filled with Apples, being heaped for better markets, but owing to such of the fruit rotting, but little will be realised, unless from regular storage houses like one in this neighbourhood which holds 40,000 barrels. This letter was dated January 26, and the temperature at the time was 17° below zero, Fahrenheit. *Mid Kent.*

COLD STORAGE FOR FRUIT.—During the discussion which arose after the reading of Mr. G. Gordon's admirable paper on English orchards, the necessity for cold storage of Apples, and fruit generally, to keep it marketable over a long season, and also to check not infrequent gluts, was strongly urged. Many persons seem to be unaware of the fact that if we will but grow good, late-keeping varieties—Lane's Prince Albert, Wellington, Newton Wonder, Bramley's Seedling, and others, as also some specially regarded as late eating varieties—there is very little difficulty in keeping them sound and fresh for several months, if properly stored. A good Apple store should be one which admits of an occasional change of air on cool days only. The walls and roofing should be so dense as shall always maintain during the winter an equable temperature; and where the atmosphere is rather moist than dry. Still, the average temperature should not be allowed to fall in any case lower than freezing-point, and may go as high as 40°. Concrete or mud walls and thatched roofs will often furnish this desideratum as less readily affected by fluctuations of heat and cold outside. But the advocates of cold storage seem to favour much lower temperatures than I have mentioned, and produced artificially. Now this point, which would be the condition of fruit, Apples especially, subjected to a low temperature—say 30°, for a long time? How would such a temperature affect the flavour and quality of the fruit? Would good Apples or Pears be like after a few days' exposure to our normal and changeable temperatures? Has anyone any knowledge on this head? *A. D.*

ARBOR-DAY.—I have read with interest your short notice of "Arbor-Day in Kent," and it seems to me that if 150 Apple, Pear and Plum trees have been thereby added to the orchard area in one rural village, the celebration has not been devoid of utility, and may very well be commended for imitation to country towns and villages, not only in Kent, but in all other counties of the kingdom. It is quite certain that if Arbor-Day were to prevail generally, nurserymen would everywhere find an increase in demand for fruit and forest-trees. There is wisdom, too, in having one day in the year (not necessarily the same day, nor even at the same season of the year in all places) set apart for planting. We all know how "stated time is a hedge to duty," thus, if it be once decided to give one day a year to the business of planting fruit and other trees, the effect will be to considerably improve the fruitfulness of our native land, and at the same time to add increased attractiveness to the landscape. The celebration in Kent seems to have been business-like. A resolution at a public meeting of the villagers in favour of "a commission to enquire into the condition of our orchards," strikes at the root of the mischief, which was the keynote of Mr. George Gordon's paper at the Society of Arts meeting on March 3. I observe that the *Gardeners' Magazine* neither favours the adoption of an Arbor-Day, nor thinks it likely that we shall obtain a commission to enquire into the state of our orchards; for what reason the one is disparaged, and the other deplored, I cannot quite see. A multitude of methods are now being hatched for the purpose of celebrating the present remarkable year of our Queen's reign; and, although loyalty is supposed to be the prominent motive, there is in connection with the movement far too much collection of *£ s. d.* Arbor-Day in Kent was inaugurated with comparatively trifling expenditure, and yet the effects will probably be felt for a century; every recurring season will witness an increase in the size of the ornamental trees planted by the children; and in years to come, villagers and wayfarers will enjoy the grateful shade as they gradually grow to maturity. Many a refreshing



FIG. 52.—ASPHODELINE TAURICA. (SEE P. 174.)

draught of that most healthful beverage—Cider, I mean—will be produced, and before very long, from the fruit of the orchard of which Sir George Birdwood and the Hereford M.P. helped to complete the planting on Arbor-Day. Trees well planted and well reared do not altogether confirm the old saying, that "those who plant Pears plant for their heirs." I have reaped quite abundant crops of Pears planted in Jubilee Year. Arbor-Day is a novelty in this country, but I hope it will not be despised on that account. In addition to the vintage, Apples and other fruit, a number of Belle de Louvain Plums were planted on Arbor-Day, in order to see whether good Prunes cannot be produced at home as well as imported from France. *Orchard.*

NEW & OLD MODES OF FUMIGATION.—The application of the old saying, "Time works wonders," is perceptible in most things, and especially in my present subject, viz., the fumigation of glasshouses. The time is now approaching when aphides abound on the tender young shoots of many kinds of plants, and I will remember the dreaded evenings when fumigating some large greenhouse or conservatory was performed, when perhaps several young gardeners would each take a flower-pot with a few hot embers in it, and a potful of damp moss (to use in the event of the paper or rag bursting into a flame). Of course, this danger compelled the young ones to remain in the house for a period of one hour or longer, as that was about the time it took for the house to become so filled with smoke that nothing could be distinctly seen at a yard distant. The consequence of this breathing-in of smoke in most cases compelled one to take to one's bed, feeling more dead than alive. Then, again, in fumigating Cucumber and Melon-pits, and in which it was not possible to enter, a sharp watch through the glass had to be kept to see that the paper did not flare, and if it did so to open the light and put it out, or take out the smoking pot, thereby losing a large volume of the all-important smoke. This method of fumigation, I was under the impression, was almost a thing of the past till recently finding in some of the more important places the old style still carried out, in some cases owing to prejudice, and in others to ignorance of the benefits of more modern and easier methods. I have for the past six years used McDougall Bros. insecticide sheets, and found them very efficacious, as well as simple in use. Instead of now remaining in the house, it is only necessary to find the capacity of the house or pit to be fumigated (which can be jotted down for future use), and put in the required number of sheets, roughly twisted and stood up singly in No. 32 or 24-pots placed in different parts of the house, and light a corner of each sheet on the top, which can be done with a match, closing the frame as closely as possible; and in the case of pits or houses, having them covered with old shading material or well-wetted garden mats. Instead of taking, say, a couple of hours for two or three men, it can be done in ten minutes by one matter of great moment in busy seasons with few hands to spare. With a good syringing in the morning over-head, in the case of thrips the syringe being directed against the under-sides of the foliage, any insects that are not wholly killed are easily dislodged and drowned. The sheets mentioned above may be torn into as small pieces as required, according to the size of the house or pit; but in using small quantities, I would recommend putting a little more than the directions given; for instance, should a pit be measured at 400 cubic feet, I would put in half a sheet, equal to 500 feet, and so on in proportion; but in larger houses, where several sheets are required, the stated number will be found sufficient, providing the confinement of the smoke within the house is what it should be. *A. G. Lydiard, Blackheath.*

SOCIETIES.

ROYAL HORTICULTURAL.

MARCH 9.—A meeting of the committees was held on Tuesday last in the Drill Hall, James Street, Westminster. It was a characteristic spring exhibition, in regard to the varieties of plants staged, and to their total quantity. Every part of the hall was utilised, its capacity being unconsciously taxed, and notwithstanding the efforts of Mr. Wainman to limit the amount of space required by exhibitors in a few instances. The number of visitors was exceptionally large also. The meetings and exhibitions are usually better attended

during spring, and on succeeding occasions we may hopefully expect such a display as was seen on Tuesday. Such plants as Cyclamen, Primulas, Freesias, Cinerarias, Hippastrums, Azaleas, Borneas, Camellias, and other spring-flowering species accounted for a considerable part of the show, and all of these were represented in first-class collections. In addition, there were several exhibits of hardy and Alpine plants, Narcissus, &c., and the usual groups of miscellaneous plants. Several of the best new varieties of Violets were well represented, and the dissimilarities could be observed conveniently.

From Mr. MOULT, of Canterbury, there was a surprising collection of Rose blooms, which attracted attention throughout the day. Helioles were exhibited in numerous species and varieties for prizes; and there was about an impractical display of Orchids, including remarkable Bolbos. Fruits and vegetables were not exhibited in great quantity. The Orchid and Floral Committee recommended Certificates or Awards of Merit in many cases, but though there were many things of much merit, there was little that was particularly novel.

Floral Committee.

Present.—W. MARRIOTT, Esq., in the chair; and Messrs. H. B. May, R. Dean, R. O. Dean, G. Stevens, J. F. Mearns, T. P. Cook, C. Salter, C. Jeffrey, J. W. Barr, G. Gordon, J. D. Payne, E. P. Pea-son, E. C. Shea, J. Walker, H. J. Jones, H. J. Cutbush, D. B. Crane, E. Beckett, H. Turner, G. Paul E. Mawley, H. Herbst, J. Laing, J. Hudson, R. M. Hogg, and Rev. G. H. Engleheart.

Messrs. CURTIS & SOX, Highgate Nurseries, London, N., had a large group of miscellaneous plants upon the floor. It included many plants of *Pyrus Malus floribunda*, some of the very desirable spring-flowering shrubs, *Forstythia suspensa*, *Erica melanthera*, *E. Wilmoreana*, *Boronia megastigma* in blossom; several kinds of several varieties of the Malmaison type of Carnation, blue-flowered Primroses, &c. (Silver Banksian Medal).

Messrs. LAING & SONS, Stanstead Nursery, Forest Hill, S.E., exhibited a group of miscellaneous plants, including *Clivia* and many pretty foliage plants (Silver Banksian Medal).

Messrs. W. PAUL & SON, Nurseries, Waltham Cross, showed their usual collection of *Camellia japonica* in much variety. Of little-known varieties we may mention the following as shown in pots, viz., *Aranitica*, pink & carad; *Linda Rosazzo*, reflexed white; *Ninia Epatica*, also reflexed white; *Coma*, a variety of *Hibiscus* of a rich shade of pink; *Madame Ambroise Vorsehaelt*, flesh coloured; the old *Lesana superba*, a fine crimson-coloured cupped bloom; *Cup of Beauty*, creamy-white, with rose suffusion in the centre; *conspicua*, a big rosy-crimson, with prominent golden stamens; *Beauty of Waltham*, pale flesh-colour, imbricate petals; *Madame Cachet*, double-flowered ground with rose-pink flakes and stripes, imbricate and handsome; *Eugene Massena*, a deep rose-coloured bloom, of a cupped form; *Marie Nicolas*, a reflexed crimson flower, with a central band on the inner petals. The plants ranged from 2 feet to 6 feet, and were admirable examples of good culture. We noticed the following other varieties among them: *G. Hovey*, *Corallina*, *Alba elegantissima*, *Exquisite*, *Delicatissima*, *Gardino*, and *Santardii*. An Award of a Silver-gilt Flora Medal was made.

Messrs. J. & S. JONES, Roupell Park Nurseries, Northwood Road, London, S.E., had a good spring-flowering plants, including *Azalea*, double-flowering varieties of *Punica sinensis*, also *Choysa tenata*, *Lilies of the Valley*, *Cyclamen*, *Boronia megastigma*, &c. All the plants were well flowered, and the group was extremely gay (Silver Banksian Medal).

Mrs. WINTHROP, Great Gables, Ilford, Essex (gr. Mr. J. Dewey), made an extensive exhibit of *Cineraria* showing well-flowered plants of a good strain (Silver Banksian Medal).

Messrs. J. JAMES & SON, Woodside, Farnham Royal, Slough, showed a long table filled with *Cinerarias* of the kind he has for many years accustomed us to, the plants dwarf, and excellently foliaged, with compact heads, and bearing a fine lot of flowers of beautiful and distinct colours, and the largest size; some of the margined flowers axed in point of size and regularity of marking anything before seen in *Cineraria* (Silver-gilt Banksian Medal).

Roses as bright as those of summer were contributed by Mr. GEO. MOULT, of Canterbury. The variety *Capitaine Haywood* was exhibited; also Mrs. Jno. Laing, Catherine Merman, Marie Pflager, Caroline Testout, and two blooms of the *Bride*. The foliage was especially good in each instance (Silver Banksian Medal).

The new Rose *Enchantress*, figured in *Gardener's Chronicle*, p. 473, Dec. 7, 1895, a hybrid between *China* and *Tescentata* varieties, was shown by Messrs. Wm. PAUL & SON, Waltham Cross. Several well-flowered specimens were shown, and, in addition, a few plants in flower of *Souvenir du President Carnot*, and *Charlotte Gillemet*, both of which are pretty pale-flowered varieties.

Mr. CHAS. TURNER, Royal Nurseries, Slough, exhibited *Hebe* well filled with the following new varieties of Violets:

—Princess of Wales, Princess Beatrice, Italia, Amiral Avelin, and Primavera. Princess of Wales is apparently the best of them, but the flowers are much paler in colour than those of Princess Beatrice. Amiral Avelin has small flowers, with much purple in them.

A fine lot of plants of the *Violet California* was shown by Mr. ISAAC HOWE, Coombe Nursery, Westbury-on-Trym,

Bristol. It is a very desirable variety, by reason of the length of the flower-stems. Some plants of a yellow-flowered *Violet*, named *Sulphurea*, were exhibited by Messrs. H. VERRAN & SOSS, Exeter Nurseries.

The hardy plants in flower exhibited by Mr. THOS. S. WADE, Hale Farm Nurseries, near Tottenham, were chiefly alpine species, and were neatly edged, the pots being hidden by moss. There were excellent plants of *Magnolia crassifolia*, *M. speciosa*, *M. elata*, *M. Strucheyi*, *Saxifraga sancta*, *apiculata*, *Boydii albida*, &c.; *Ranunculus anemoneoides*, *Ficaria grandiflora*, *Primula dentata* alba, the dwarf purple-flowered *Primula Cuspid*, *P. acutis corulea*, &c. Also, a group of plants of *P. obtusica grandiflora*, including some plants of the new variety, *P. obtusica*, and the committee distinguished by an Award of Merit. Mr. WADE had likewise a group of flowers of *Narcissus*, including such varieties as *Sir Watkin*, *Princesp*, *Golden Spur*, *Obvallaris*, *Telamonius* &c.-pl., *W. Goldring*, *ceruus Bishop Mann*, *c.* Mrs. Thompson, *Emperor*, *Empress*, *Queen of Spain*, *incomparabilis*, *sulphureus*, *albicus*, *Leedsii Cycnorus*, *Barri conspicuus*, and several others of the sea (Silver Banksian Medal).

A collection of hardy plants in flower, shown by Messrs. PAUL & SON, the Old Nurseries, Chesham, included several specimens of *Megasea*, also *Hepaticas*, *Saxifragas*, *Bulbocodium vernum*, the double-flowering *Primula purpurea*, *Pulsatilla snow-white*, Messrs. W. PAUL & SON, a pure white-flowering variety, and several *Hebels*. Two specimens, bearing berries of a dwarf-growing *Cotoneaster horizontalis*, were exhibited (First-class Certificate); and a pale-flowered form of *Marchal Niel Rose* (Bronze Banksian Medal).

Messrs. BARR & SON, King Street, Covent Garden, showed a collection of *Hebels*, including *Hel. Colchicum*, one of the dwarfest of the purple-flowered species; *H. Lady Carrington*, a cross, a rather tall plant (2 feet), with light purple-coloured blossoms, looking like an exaggerated *H. punctata*; *H. Jas. Atkins*, a variety lighter in colour, and blossoming before the leaves show; *Commander Bantay*, creamy white, suffused with green at bottom of flower; the double-looking *H. Lardina*, with short terminal spike of green flowers, and several other crosses. *Narcissus* of many varieties were noted, also *Chionodoxas*, including a white-flowered variety of *C. Lucille*, which was awarded an Award of Merit; *Chionodoxa gigantea*, *Sellas*, *Megasea ligulata*, *Puschkinia Blietlica*, a few *Hebels*, including *L. Wilsoni*; *Saxifraga oppositifolia splendens*, exceedingly dwarf and streaked with light purple-coloured blossoms. The more pleasing of the *Narcissus* shown were *Ard Righ*, *triandrus albus pallidus*, *precox*, *obvallaris*, *capax*, *Golden Spin*, and a form of *Corbularia*, named *Cebirino* (J. Cyclamenus, &c.) (Silver Banksian Medal).

Cyclamen were capital from Mrs. CRAWFORD, Gatton Lodge, Reigate (gr. Mr. Stogrove), who exhibited a considerably-sized group of plants of mixed colours.

The ST. GEORGE'S NURSERY Co., Hanwell, W., staged a very good collection of *Cyclamen*, of a large-flowered strain, in which the segments are of very considerable length. The colours of the flowers are distinct, and the habit good. The same Company also exhibited a few plants described as *grandiflora alba*, of very stant habit, with apical flowers the segments measuring 2½ inches long. An Award of Merit was recommended to this strain. Several plants with fringed flowers were shown, and were very pretty (Silver-gilt Banksian Medal).

Mr. JOHN MAY, Gordon Nursery, St. Margarets, Twickenham, Chelsea, occupied the greater part of one of the large central tables. They were exhibited as showing the types and strains from which seed is saved, and included the following varieties:—*Double White*, *Double Lutea*, *Double Blue*, *Double Rose*, *Double Salmon*, *Gigantic White*, *Gigantic Red*, *Gigantic Rose*, *Superb*, *Fringed Red*, *Fringed White*, *White*, *varm*, of the common type; *Double White*, *Double Scarlet*, *Gigantic Blue* (single), *Chelsea Mauve* (single) (Silver-gilt Banksian Medal).

Messrs. CANNELL & SONS, Swanley, Kent, showed a group of plants of their "pyramidalis" strain of *Cinerea Primula*, and several very useful and pretty varieties of *Boronia-rooted Beauties*, including *Gloire de Soanen*, *President Bonroulle*, with dark, metallic-looking leaves and rose-coloured flowers; the variety *Manichet auréo-maculata*, a very singular-looking plant, with dwarf-habited foliage considerably variegated with white, and numerous very small and delicately pretty flowers upon many flowered, rather tall panicles. *Erfordia*, *Guerrit*, and *Pico* are also free flowering and useful plants (Bronze Banksian Medal).

A very creditable group of *Freesias* in flower was shown by the Hon. H. C. LEGER, Fulmer, Slough (gr. Mr. Mowbray). (Bronze Flora Medal.)

An Award of Merit was obtained by Mr. H. B. MAY, Dewey Nurseries, Farnham, for *Lomaria chlorata grandis*, a very pretty and useful variety.

Messrs. HUGH LOW & CO., Bush Hill Nurseries, Enfield, displayed a group of varieties of *Epacris*, embracing a good variety of colour; and also some new varieties of *Azalea indica*. A fine flower of *Gerbera Johnsoni* came from Mr. M. ALLEN, Highgate, Hampstead.

Mr. BACKHOUSE, of Sutton Court, Herefordshire, sent some flowers of seedling *Narcissus*, some of which were obtained

being made almost like liquid, some jelly that is soluble at about the temperature of the hands is taken, and with a small ball of this the seeds are shaken in the hand, and then poured on to a glass plate. The jelly soon sets. In a few days the plants will appear, and then there is weeding to be done, until all that are left resemble each other. The dust of the rooms and the atmosphere are full of these "weeds"—indeed, they are everywhere. But one plant can be isolated under the microscope, and made to grow continuously under observation there. In fact, it could be grown in a microscopic greenhouse, which could be heated, illuminated, filled with any desirable gas—could, indeed, be used as, and serve all the purposes of, an ordinary greenhouse.

One of the principal questions regarding each organism was to determine whether it is a friend or an enemy. Recent developments have proved that microscopic gardening has been carried on for years by agencies and persons not fully aware of the fact. Artificial hybridisation was a case in point. In that case the stigma was the medium (soil), and the pollen the seed. The pollen-grains being placed upon the stigma, commenced to grow, and emit a tube through the style to the ovary; and there is one known case, at least, where the growth of such seeds is sometimes frustrated by the presence of weeds. The spore of a certain fungus is sometimes deposited upon the stigma of a particular plant at about the same time as the pollen-grain, and when this happens the spore which has been deposited on the pollen-grain do, but the tube of the fungus-spore invariably reaches the ovary first. These fungus-spores were brought to the stigma by bees, and bees were therefore the oldest microscopic gardeners. Of course the stigma of a certain plant was a suitable soil (medium), only for certain seeds. The first human attempt, Mr. Ward knew of at microscopic gardening was in relation to brewing. In this case the plant-bed was the wort, and the plants were certain organisms in the air which effected fermentation. This had latterly been turned to account, and brewing was no longer carried out in the hay-hazard, as mentioned that previously, but the principles of the operation were not perfectly understood.

The ordinary soil of a field or garden was simply alive, and contained myriads of Bacteria, fungus-spores, and other minute organisms. It varies greatly in the number it contains, even from one million to 15 million in a thin slice. It was found that the first 3 inches from the surface contained the greatest number, and they became gradually fewer until at about 2 feet there were none existent. What were these things doing? The work of many of these organisms differed much. One set would decompose paper, and render it food for plants; another would do the same with regard to the case of farmyard-manure. Soil without such organisms would not support plant-life. Mr. Ward then referred to an organism that it was proved liberated nitrogen in the soil, and said that this in the future would probably explain the circuits of the nitrogen from plants and animals through the air back to the soil.

The rust upon Wheat was then referred to, the history of its identification being told upon, and the practical value of the results from this knowledge. There were two stages in the history of these parasites—their life outside the plant, and their life inside the plant, and it was essential to know, in order to circumvent them, what was the most vulnerable moment of their existence. In the case of seeds which were mixed with or carried fungus spores, it had been found that the fungus seeds could be killed by hot water at a temperature that failed to injure the other seeds at all. In all antiseptic treatment, it had to be studied how to treat and kill the parasite without injuring the host plant.

The general use and application of antiseptic measures were remarked upon, and Prof. Ward stated that notwithstanding the success that had resulted therefrom, more consistent success would be obtained if the measures were always intelligently applied, and the operators thoroughly understood how to apply them, and at what moment. The evidence in the laboratory was conclusive, but it was for the cultivators to experiment afterwards in order to see how far and under what circumstances the antiseptics could be applied in the garden without injury. By doing so they would considerably help the microscopic gardeners also in the laboratory, and the cultivators and the former should have many suggestions and ideas to exchange with each other. Unfortunately, said Prof. Ward, there had been some lack of interest in the subject. In conclusion, the lecturer said that he had been able to say only sufficient to explain the matter without going into details; but his paper, being too long to be read at the time, would be printed in the Society's Journal.

Rev. GEO. HENSLOW made a few remarks, and referred to that plant that Piny had noted, that in the first century of our era leguminous plants were grown for the purpose of tanning in dye. He said, "I only recently that we know why such a practice was scientifically correct and valuable."

HORTICULTURAL MEETING AT GHEENT.

AMONG the number of interesting exhibits seen at the recent meeting of the *Chambre Syndicale des Horticulteurs Belges*, the following plants may be mentioned—

Dendrobium Kingianum, an Australian species, bearing many small flowers, an excellent greenhouse plant; *Carludovica palmifolia*, a very beautiful plant with deep green leaves still in perfect condition, its numerous adventitious roots and suckers give it a pictorial appearance; both these plants were from M. L. DE SARR-DUVINER.

Tillandsia Lindenii vera, is a dwarf variety, vigorous, and with three fine spikes of bloom; it came from M. JULES DE COCK. *Mitosisopsis Biennata* rosea, with three racemes of large, rather dark rose flowers; *Cyrtopodium Boxalli*, with fourteen well-coloured blooms; and *Odontoglossum hystrix* var. remarkable for its almost lavender colour, which came from M. JULES IRE. *Vriesea Ledouinii* Closely, spike dark red, very shiny, with flowers very bright yellow at the bracts, and *Cyrtopodium villosum* × *Stanei*, with petals like those of *villosum*, and the beautifully coloured by distinguishing by the unusual wide white border, were both shown by M. POELMANS-MATHIEU. *Azalea* Mme. J. Baumann was sent by M. J. BAUMANN; the flower was large, salmon white, double, the petals slightly scalloped, an excellent variety. M. A. DALLIERE exhibited *Dendrobium thysiflorum* (Hildebrandt), with four flowering and three budding racemes. M. G. DE COCK sent *Gymnis* Mme. G. De Cock, with a fine fruss of large well-coloured flowers; *Dichorisandra argentea*, a specimen with twelve spikes of fresh foliage, and *Pandanus pacificus* with fine shining green foliage and of dwarf habit, both came from M. A.B. RIGOUTS. From MM. DEBIEZ FRERES came *Livingstonia rotundifolia*, a dwarf variety, fine and healthy; and from the SOCIÉTÉ HORTICOLE GANTOISE, a group of six seedling *Anthurium* of the Rothschildianum section which obtained the highest award, being excellent varieties, very effective, the spathe large and wonderfully varied in marking, some having small other large spots, and the colours also being white and of various shades of red.

At this Meeting a plan of the Hamburg Horticultural Exhibition was shown and much commented upon; the groups extend over 15 hectares (1 hec. = 2.4 acres circa), the lake over 6500 square metres (1 sq. m. = 1.1 yd. circa), the great exhibition hall 8000 square metres. The halls for the general exhibition are 450 feet long, those for the industrial section 975 feet; the flower-glass 675 feet by 260; various tents, refreshment-rooms, &c., are to be erected, and there are to be roseries and a large fruit garden.

From the storms in Belgium on March 3, various horticultural establishments near Ghent, notably at Loozstadi and Meerbeke, suffered considerable damage. *Ch. De Busseler*.

NATIONAL CHRYSANTHEMUM.

MARCH 8.—A meeting of the general committee took place at Anderson's Hotel on the above date, Mr. T. W. SANDERS presiding. A letter was read from M. Henri de Vilmorin, acknowledging the honour done him in electing him a member of the fellow of the Society. It was unanimously resolved that, in consideration of the honour done to the hospitality shown to the recent deputation from the Society to the Ghent and other shows, a Silver-gilt Medal of the Society should be presented for competition with Chrysanthemum at the exhibitions to be held during the present year.

Mr. G. E. Willis, of East Finchley, was elected a member of the committee in the place of Mr. N. Davis, resigned. Messrs. E. Beckett, W. Mease, J. H. Witty, T. Bevan, G. Stevens, and H. Owen were re-elected members of the Executive Committee, and elected by rotation; Mr. M. W. Higgs, Leatherhead, was elected in the room of Mr. N. Davis, who had resigned. Mr. T. Bevan was unanimously re-elected chairman of the Floral Committee. The schedule revision sub-committee recommended the creation of two classes of "amateurs," one comprising those who mainly, if not entirely, cultivate their Chrysanthemums themselves, and who while employing not more than one assistant regularly, are yet the real growers and exhibitors of their plants. To this division nine classes are appropriated, an extension of the number which has hitherto found a place in the schedule; and single-handed gardeners would be allowed to compete in these classes, but in no other division. The second class of amateurs would be the definition hitherto observed, and they have eight classes apportioned to them. The exhibitors in each case can compete in any of the table-decoration classes. This approved new arrangement appears to give much satisfaction to the large body of amateurs who are members of the Society. The Committee have also set apart three classes commemorative of Her Majesty the Queen attaining to the sixtieth year of her reign. One is for thirty-six Blooms of Chrysanthemums, twenty-four Japanese and twelve incurred distinct novelties introduced in 1895, 1896, 1897, or not yet in commerce to be shown on ordinary boards for Japanese blooms; all to be correctly named. This is open to the trade only. The other is for thirty-six blooms of white, yellow and crimson Japanese Chrysanthemums, in twelve varieties, three blooms of each, to be shown on ordinary boards, with three inches of clear stem above the boards. The handsome Turner Memorial, which was not competed for at the last Exhibition is offered as a Challenge Cup in this class, and it is to become the property of the individual winning it two years in succession, or three times in all.

The third of the commemorative classes is that for varieties of 24 distinct angles, nine of them to be varieties in cultivation in the country at the time of the accession of the Queen, the remaining fifteen varieties those introduced during the past thirty years, five fruits of each to be shown, and the varieties need not necessarily have been grown by the exhibitor. The schedule gives the names of thirty varieties in cultivation sixty years ago, of which are among the leading varieties grown in the present day. The sum of £15 is given in five prizes.

It was resolved that the Classification Committee be continued during the present year, the appointment of the Catalogue Revision Committee being postponed for the present. It being considered some revision of the rules was necessary, a sub-committee was appointed to consider the matter and report at a future meeting. Mr. J. T. Simpson offered a special prize of one guinea for the premier Japanese bloom in the next November show; and, in addition, expressed his willingness to make a painting in oils of the flower, and present it to the winner of the prize. The Secretary reported that there were at the present time 703 Ordinary, 169 Fellows, and 88 Foreign Members, making 849 in all; and 136 societies in affiliation.

UNITED HORTICULTURAL PROVIDENT AND BENEFIT.

MARCH 8.—The annual general meeting of members of this provident benefit society was held on this date, in the Galedonian Hotel, Adelphi, Strand. The chair was filled by Mr. A. DEAN, and there was a moderate attendance. The minutes of the last meeting having been read and adopted, the secretary (Mr. Collins) proceeded to read the report of the committee for 1896.

The accounts have again been carefully audited by Messrs. W. Gunner and Geo. Dixon, and found correct. The committee specially invite all young gardeners and seedmen to join this excellent society, feeling sure they cannot do better than join the "United."

The detailed balance-sheet was a most satisfactory one, and showed that there was a balance to date in favour of the benefit fund of £284 5s. 6d., a balance in favour of the benevolent fund of £3904 0s. 5d., of the voluntary convalescent fund of £304 6s. 6d., and of the management fund of £24 14s. 7d., which, together with a balance carried from the previous year of £172 17s. 6d., makes a total of £11,960 4s. 5d., being the assets of the society. The report and balance-sheet being formally proposed and seconded, was passed unanimously, in the absence of the slightest criticism.

The Chairman then delivered an address upon the aims of the society, and the singularly successful character of its operations. The advantages the institution offered was strikingly exemplified by the fact that Mr. J. George, being now 70 years of age, retires with a sum of £82 10s. to his credit—a circumstance that is probably without a parallel in similar institutions. Seven years ago the amount standing to Mr. George's credit was about £20, and it had, therefore, increased during that time to the extent of nearly £24.

The membership of the Society in 1887 was 191, in 1890 it was 310, and since then it had risen to 641. The election of officers was then proceeded with, and to fill five vacancies that occurred upon the committee, the following members were elected—Messrs. Kelf, Regent's Park; E. T. Cooke; Hensley, Edmonton Nurseries; Coles and Winter. The whole of the officers were re-elected.

NURSERY NOTES.

MESSRS. JNO. LAING & SONS.

AT the Stanstead Nurseries, Forest Hill, the work of raising seedling Begonias is in full progress. There are several houses filled with boxes containing seedlings that have been, or are about to be, pricked off; and whilst expressing astonishment at the numbers in such a stage, we were led by Mr. Laing into other structures in which were many more plants that had evidently been raised specially early. Some of these were in pots 6 and 7 inches in diameter, and had made sufficient growth that they are already flowering. Mr. Laing can tell us a very great deal of the early history of these glorious tuberous Begonias, for he was one of the first to set to work to produce them, using in the first instance the species *B. holivienis*, *B. Veitchii*, *B. Pearcei*, and a few varieties. Their culture has ever since been one of his specialties, and though many growers have assisted in perfecting them since, Mr. Laing's enthusiasm for the plants is as great as ever.

But though he had seen sufficient seedling Begonias one would think for almost any purpose, these were not all, and upon entering another of the low span-roofed houses that abut on to the potting-shed, there were half-a-dozen or more boxes engaged in "pricking off." As this work is done as soon as the first leaves appear, it is a very delicate operation. There must be no undue hurrying, nor do the boys touch the tender seedlings with the hand. Under the eyes of a foreman they sit down, and each takes a box filled with a suitable compost. In the left hand he holds a tiny wooden dibber, and in the right a forked stick, with these he transfers the plants

from the seed-bed (also a box) into the fresh compost. If there has been too great a liberality in the sowing of the seeds, this becomes evident at the present and subsequent stages, and there will be all the more need to hasten the work of transplantation. But constant practice in this and similar work prevents such mistakes from being frequent in a nursery.

In another department, work has been occasioned by the Caladiums, most of which are now commencing to grow freely. If nurserymen were always to tell their own secrets, we should probably hear that the Temple Show being held so early in the year as May, obliges them to make the very most of every bright spring day that occurs. This season, however, February has been a mild month, and such plants as Begonias, Caladiums, and many others that have to make their entire growth after Christmas will have a comparative opportunity.

That the season is by no means late may be observed in the Clivias—house, for here the plants are already partially in bloom, and in a week at least there will undoubtedly be a good show. These crosses of Clivia are quite worthy of recommendation, as greenhouse plants, they afford good quantities of bloom with very little trouble, and require but a small amount of heat. Indeed, a little frost does not appear to kill them; but if secure from this they are happy, and there are few more suitable plants for an ordinary dwelling-house window. The latest novelty Messrs. Laing have amongst the Clivias is the variegated one. Several plants of this variety were in bloom, and seeing that throughout the year the variety has some merit as an ornamental-leaved plant, and that it will flower also each year, it may in time become popular. There were some of the varieties in flower, including Patrick Davidson, Princess May, and Stanstead Beauty. Lady Wolverton, and Advance, too, both of them good ones, would open their flowers soon; and Glow, one of the highest-coloured. Prince of Wales, Mrs. Jno. Laing, and Jno. Laing, are capital varieties, but flower a little later. Then there is a new one, named after the Right Hon. Joseph Chamberlain, M.P. This is said to be of much merit, and will be in flower shortly. In the stove is being effected the propagation of such plants as Crotons, Dracenas, Sonerilas, and a host of species, including the pretty Saxifraga sarmentosa tricolor variegata. In another house are batches of Cinerarias and Primulas in bloom. Dahlias and Cannas, Carnations and other plants, are in various stages in pits and frames; and spring-work of diverse nature in each department is observable.

AMERICAN NOTES.

THE WINTER MEETINGS OF HORTICULTURAL SOCIETIES.

Almost every State in the Union, and each of the southern provinces in the Dominion, has its own horticultural society. The principal meeting of each society is usually held in the winter, continuing two to four days. The attendance at these several meetings is most thoroughly representative of the best horticultural interests in the land, and the topics discussed are the best possible index of general thought and progress. Most of the meetings for this year have now been held. In spite of discouraging, and sometimes disastrous, markets, the attendance and the interest in these meetings has been larger than ever.

Two new societies of some promise have been organized in the eastern states; one in Vermont, organized December 3, with Mr. T. L. Kinney as president and Professor F. A. Waugh as secretary; and the Hudson Valley Horticultural Society, to embrace eighteen counties in eastern New York, organized at Poughkeepsie, February 3, with Mr. James Wood as president and Mr. E. Van Alstyne as secretary. Both these societies have the room and the opportunity for success.

Probably the strongest of the fruit-growers' organisations is the Western New York Horticultural Society, which held its forty-second annual

meeting at Rochester this year. One of the most interesting subjects presented on that occasion was that of thinning Apples. The 1896 Apple crop was extremely heavy. Mr. S. A. Beach, of the Geneva (New York) Experiment Station, in co-operation with neighbouring fruit-growers, made several tests to determine the value of thinning the fruit. For instance, Baldwins thinned to 4 inches apart gave 22 per cent. more of No. 1 fruit than trees not so treated, though the total crop was reduced 26 per cent. One tree of Rhode Island Greening, from which only the inferior fruits were removed early in the season, showed an increase of 6 per cent. in the total crop, and of 10 per cent. in quantity of No. 1 fruit. Hubbardson's Nonsuch, thinned to 6 inches apart, bore 25 per cent. less fruit, but 17 per cent. more of No. 1 fruit. At the same time other advantages were secured, such as improved colour, better quality in the fruit, and better health in the trees. Some of the trees on which the thinning was practised have formed many fruit-buds, and promise a crop for this year. Mr. Beach and the co-operating orchardists think the method practicable in commercial orchards under most circumstances.

Another important meeting was that of the Michigan Horticultural Society at Grand Rapids; at this meeting Mr. John Craig, horticulturist at the Central Experimental Farms, Ottawa, Ontario, reported very interesting experiments with cover crops in orchards. Most of the commercial Apple orchards in America are cultivated several times in the spring. By sowing some cover crop at the last cultivation, the deleterious action of the sun and air on the soil is avoided, alternate freezing and thawing are prevented, and, when turned under, they supply some quantity of plant food and increase the organic matter in the soil. They also keep down weeds. Leguminous crops are especially desirable. Mr. Craig tested Crimson, White, Red, Aleike, and Mammoth Clovers, Alfalfa, Peas, orchard Grass (Dactylus glomerata), and some mixtures. The Mammoth Clover gave best results. Peas were second best. The Crimson Clover sown July 13, gave a crop of 22,234 lb. green material per acre, containing 17 per cent. dry matter. Mammoth Clover gave 13,210 lb. of green material per acre, containing 21 per cent. dry matter.

These and similar reports at the various horticultural meetings emphasise the refinement of methods now developing in all American horticultural industries—a refinement which has received special impetus by reason of the recent heavy crops and glutted markets.

ELECTRO-GERMINATION.

Mr. Asa S. Kinney has just reported through the Hatch Experiment Station (Massachusetts) some interesting experiments in the use of electric currents upon germinating seeds. These experiments indicate that the useful strength of an electric current acting on seeds, lies within very narrow limits; that such currents do not lose their effect, but may act as a constant stimulation to growth and development; and that, in some cases, an actually larger percentage of germination may be gained. In seeds receiving a strong current, there was an increase of 30 per cent. in the length of the radicles at the end of seventy-two hours; though at the end of ninety-six hours, the difference in favour of treated seeds was reduced to 15 per cent. The gain in growth of hypocotyle by use of an "optimum" current, was only 13 per cent. F. A. Waugh, Burlington, Vt.

NEW YORK BOTANIC GARDEN.

Mr. Samuel Henshaw has been appointed head gardener to the recently-established New York Botanic Gardens. Mr. Henshaw is a native of Manchester, and was for a time in the service of the botanic garden of that city. He migrated to the States in 1868, and devoted much of his attention to landscape gardening. Our Own Correspondent.

AMERICAN FOREST RESERVES.

We learn that one of the last acts of President Cleveland was the establishment of a number of forest reserves in the Western States and territories. They embrace a total of 21,000,000 acres, and con-

tain all the important timber-growing areas in the West belonging to the Government. This step is the result of the persistent work and unflinching insistence of Professor Sargent. Its importance to the States can hardly be over-estimated.

Obituary.

CHARLES SHARPE.—The death occurred somewhat suddenly, at Sleaford, of Mr. Charles Sharpe, a well-known seed merchant and agriculturist. Mr. Sharpe was a magistrate and alderman for the Kesteven Division of Lincolnshire, and also President of the Lincolnshire Agricultural Society for the present year. He had twice unsuccessfully contested constituencies in the county. In agricultural and horticultural circles he will be well remembered for the active part he took in 1869 in promoting the passing of the Adulteration of Seeds Act, and its Amendment in 1878.



[The term "accumulated temperature" indicates the aggregate amount, as well as the duration, of degrees of temperature above or below 42° Fahr. for the period named; and this combined result is expressed in Day-degrees—a "Day-degree" signifying 1° continued for twenty-four hours, or any other number of degrees for an inversely proportional number of hours.]

Days.	TEMPERATURE.		RAINFALL.		BRIGHT SUN.
	Above (+) or below (-) the Mean for the week ending March 6.	ACCUMULATED.	Total Fall since Jan. 8, 1897.	Percentage of possible Duration of possible Duration since Jan. 8, 1897.	
	Above 42° for the Week.	Below 42° for the Week.	No. of Rainy Days since Jan. 8, 1897.	Mean for the Week.	

Day.	Day.	Day.	Day.	Inch.	Inch.
deg.	deg.	deg.	deg.	10ths.	10ths.
0 - 1	2	3	2	7 + 27	1 - 42
1 - 2	1	38	-	9 + 32	1 + 35
2 - 1	7	80	+ 7	18	3 + 40
3 - 1	13	29	- 1	48	7 + 53
4 - 0	12	33	0	35	8 + 38
5 - 1	16	23	0	29	8 + 37
6 - 1	6	19	- 23	20	5 + 35
7 - 0	10	25	- 3	20	7 + 41
8 - 1	14	24	- 4	56	12 + 50
9 - 2	8	52	- 26	15	9 + 42
10 - 2	14	27	- 3	111	40
11 - 1	21	7	+ 36	914	49

The districts indicated by number in the first column are the following:—

- 0, Scotland, N. Principal Wheat-producing Districts—
- 1, Scotland, E.; 2, England, N.E.; 3, England, E.;
- 4, Midland Counties; 5, England, including London, S. Principal Grazing, etc., Districts—6, Scotland, W.;
- 7, England, N.W.; 8, England, S.W.; 9, Ireland, N.;
- 10, Ireland, S.; 11, Channel Islands.

THE PAST WEEK.

The following summary record of the weather throughout the British Islands for the week ending March 6, is furnished from the Meteorological Office:—

The weather during this period was very unsettled and stormy, with considerable falls of rain during the greater part of the week, and heavy showers of hail, sleet, or wet snow towards its close. Thunder and lightning occurred at times in many parts of the kingdom.

The temperature was rather below the mean in most districts, but just equalled it in the 'Midland Counties' and 'England, N.W.,' and slightly exceeded it in 'England, S., and E.' The highest of the maxima were registered on somewhat irregular dates, and ranged from 52° in 'England, S.,' to 45° in 'England, N.E.' The lowest of the minima were recorded, as a rule, about the middle of the week, when they ranged from 10° in 'Scotland, E.,' and 24° in 'Scotland, N.,' to 28° in 'England, S.,' and to 35° in the 'Channel Islands.'

The rainfall exceeded the mean in all districts excepting

'Scotland, N.' Over Ireland and the greater part of England, the fall was very heavy, amounting to about four times as much as the mean over the central and southern districts. In 'Scotland, E.' the excess was very slight.

"The bright sunshine was deficient in most parts of Great Britain, but exceeded the normal over Ireland, and also in 'England, E. and N.W.' and 'Scotland, W.' The percentage of the possible duration ranged from 39 in 'England, E.' and from 53 in 'Scotland, W.' and 52 in 'Ireland,' to 15 in 'Scotland, E.' and 17 in 'Scotland, N.'"

MARKETS.

COVENT GARDEN, MARCH 11.

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.		s. d. s. d.	
Anemone, doz. bun.	1 6-0	Orchids:—	
Arums, p. 12 blooms	2 0-4	Odontoglossum	
Bouvardias, per bu.	0 6-0	crispum, 12 bun.	2 0-6 0
Camassias, pr. doz.	0 0-0	Pelargoniums, scar-	
blooms ...	2 0-3 0	let, per 12 bunch.	4 0-0 0
Eucharis, per dozen	3 0-4 0	... per 12 sprays...	0 6-0 0
Hyacinths (Roman)		Pyramidal, per doz.	2 0-4 0
doz. sprays ...	0 6-1 0	Roses (French), per	
Lilac, wh. (French),		doz. blooms ...	1 6-3 0
per bunch ...	3 6-4 0	— 10-10-10	1 0-1 0
Lilium Harris, per		— yellow (Maré-	
doz. blooms ...	2 0-4 0	chal), per dozen	4 0-6 0
Lily of the Valley,		red, per dozen	4 0-6 0
doz. sprays ...	0 6-1 0	— 8-8-8	8 0-0 0
Maidenhair Fern,		— Safrano, per doz.	2 0-4 0
per 12 bunches ...	4 0-8 0	Swandrops, doz.	
Marguerites, per 12		bunches ...	1 0-1 6
bunches ...	2 0-4 0	Tuberous, 12 blms.	10-1 6
Mignonette, per		Tulips, per doz. ...	0 6-1 3
doz. bunches ...	4 0-6 0	Violets (Fr) Parme,	
Mimos (French),		per bunch ...	2 6-3 6
per bunch ...	1 0-1 6	— Cear, bun.	20-3 0
Narcissus, various,		— doz. bun.	10-1 6
per doz. bunches ...	1 6-3 0	— (Esp.) per	
Battleya, 12 blms.	9 0-12 1	doz. bun.	1 6-2 6

ORCHID-BLOOM N VARIETY.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.		s. d. s. d.	
Adiantum, per doz.	4 0-12 0	Ferns, small, doz. ...	1 0-2 0
Aspidistra, per doz.	5 0-15 0	varied, doz. ...	5 0-12 0
— specimen, each	5 0-15 0	Ficus elastica, each	10-7 6
Azaleas, per doz. ...	18 0-28 0	Foliage plants, per	
Cheriaris, per doz.	6 0-10 0	doz. ...	12-0 3 0
Cyclamen, per doz.	9 0-15 0	Goniatas, per doz.	8 0-12 0
Dafodils, per doz.	6 0-9 0	Hyacinths, per doz.	6 0-12 0
Dracenas, each ...	1 0-7 8	Hydrangea, per plant	2-3 0
— various, p. doz.	12 0-24 0	per bunch ...	8 0-12 0
Evergreen shrubs,		Mignonette, per doz.	8 0-10 0
in variety, doz. ...	6 0-24 0	Palms, various, ea.	2 0-10 0
Ericas, per doz. ...	10 0-12 0	— specimens, ea.	10 0-6 8 0
Erica, hymenale,		Spiraea, per doz. ...	6 0-9 0
doz. ...	10 0-15 0		

FRUIT.—AVERAGE WHOLESALE PRICES.

s. d. s. d.		s. d. s. d.	
Apples, French		Nuts, Cob, per	
Crab, per bush ...	3 6-4 0	100 lb.	60 0-7 0
— Wellingtons, p.		Peaches, Cape, per	
sieve ...	21 0-30 0	box containing 20	8 0-12 0
Figs, per doz. ...	6 0-10 0	Pears, Cape, p. case	
Grapes, Alicante,		containing 20	7 0-8 0
1st quality,		— Ester Heurds	
per lb. ...	2 6-2 0	(California) per	
— Alicante, 2nd		case, 20 doz.,	
quality, per lb.	2 0-2 0	per case ...	14 0-16 0
— Cape, Black, lb.	9 0-10 0	— Do. do., small	
— Cape Muscat,		cases, 10 to 4 1/2	
per lb. ...	0 0-10 0	doz., per case	8 0-10 0
— Gros Colman,		Pine-apples, St. Mi-	
selected, p. lb.	2 9-3 3	chal, each ...	4 0-6 0
— Gros Colmar,		Strawberries, p. oz.	1 6-1 9
2nd quality, lb.	2 3-2 6		

VEGETABLES.—AVERAGE WHOLESALE PRICES.

s. d. s. d.		s. d. s. d.	
Artichokes, Globe,		Mint, per bunch ...	0 0-0 5
per doz. ...	2 0-2 0	Mushrooms (indoor)	
— Chinese (Sole)		per lb. ...	0 0-0 8
chystuberifera),		Onions, English, p.	
per lb. ...	0 3-0 3	cwt. ...	5 6-6 0
Asparagus, Paris		— Foreign, p. cwt.	6 0-6 0
Giant, p. bun.	20 0-30 0	Peas, ordinary	
— English, per		(Chamel) 1s	
bundle ...	6 0-7 0	(lands), per lb.	2 0-2 0
Beans, French,		Peas, Kidneyes	
Chamel 1s,		(Chamel) 1s	
per lb. ...	1 8-1 8	(lands), per lb.	2 6-2 6
— Madeira Kid,		Potatoes, per 100	
per, per bkt.		lbs., Chamel	
of 8 to 10 lb. ...	2 6-3 0	Islands, per lb.	0 5-0 6
Cauliflowers, Cher		— Kidney Pot.	
bourg, per		lbs., French, lb.	0 2-0 3
doz. ...	1 3-1 0	Radiashes, Chamel	
Cauliflowers, Ital-		1s, per dozen	10-1 3
ian, per doz.		bunches ...	
1s ...	4 0-4 6	Ethubarb (Forced),	
Cauliflowers, Cora-		per doz. ...	0 9-10 0
wall, per doz.		Salads, small, per	
doz. ...	0 0-10 0	doz. punnets ...	1 6-1 6
Cucumbers, home-		Sea Kale, per pun-	
grown, select,		net, 3 1/2 to 4 lb.	
per doz. ...	5 0-6 0	weight, doz.	0 1-0 1
— 2nds, per dozen		Tomatoes, Canary Is-	
... 3 0-3 0		lands, per case,	
Horseradish, Eng-		about 12 lb.	4 0-5 0
lish, per bundle		2 8-1 8	
Horseradish, Ger-			
man, per bundle			

POTATOES.

Supplies very heavy, and prices still dropping. It is difficult to get orders for inferior samples. Dunbar, 30c. to 35c.; do., Saxons, 35c. to 70c.; others, 30c. to 60c. John East, Wellington Street, Covent Garden.

SEEDS.

LONDON: March 10.—Messrs. John Shaw & Sons, Seed Merchants, of Great-Maze Pond, Borough, London, S. E., write that there is now naturally more business passing in seeds; nevertheless, when the land recovers from its present seriously ailing condition an increasing number of orders will come to hand. Prices all round continue at the low level characteristic of the present season. Turcs realise former terms. There is no change in either Lucerne or Sainfoin. Some American Lima boiling Peas just landed, being good and cheap, attract attention. Canary seed is steady. Hemp and Millet unaltered. Peas and Haricots, and Linsed strong.

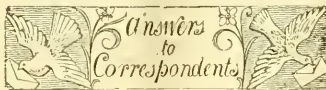
FRUIT AND VEGETABLES.

LIVERPOOL: March 10.—Prices current to-day at the following markets:—St. John's: Potatoes, 8s. to 10s. per peck; Asparagus, 6s. per 100; Cucumbers, 1s. each; Grapes, English, 3s. 6d. per lb.; do., foreign, 8d. to 1s. do.; Pines, English, 4s. to 8s. each; Mushrooms, 1s. 3d. per lb. Birkenhead: Potatoes, 8d. to 10s. per peck; do., new, 4d. per lb.; Cucumbers, 9d. to 1s. each; Grapes, foreign, 8d. to 10s. per lb.; Pines, English, 2s. to 5s. each; Mushrooms, 1s. per lb. North Hay: Potatoes: Imperators, 1s. 6d. to 1s. 10d.; Giants, 1s. 6d. to 1s. 10d.; Main Crop, 2s. 6d. to 2s. 6d.; Clampons, 1s. 8d. to 1s. 10d.; Bruces, 1s. 10d. to 2s. 3d. per cwt.; Turnips, 10d. to 1s. per 12 bunches; Swedes, 1s. to 1s. 3d. per cwt.; Carrots, 3s. to 5s. 3d. do.; Onions, English, 4s. to 4s. 6d. do.; do., foreign, 2s. 6d. to 3s. 3d. do.; Cauliflowers, 1s. 6d. to 2s. 6d. per dozen; Cabbages, 6d. to 1s. 6d. do.; Celery, 6d. to 1s. 3d. do.

CORN.

AVERAGE PRICES OF BRITISH CORN (per imperial qr.), for the week ending March 6, and for the corresponding period of 1896, together with the difference in the quotations. These figures are based on the Official Weekly Return:—

Description.	1896.		1897.		Difference.
	s. d.	s. d.	s. d.	s. d.	
Wheat ...	21 4	28 8	21 4	28 8	+ 7 4
Barley ...	25 5	23 0	25 5	23 0	+ 2 5
Oats ...	13 8	16 8	13 8	16 8	+ 3 0



ADDENDUM.—GERMINATING APPARATUS. The designer of the germinating seed apparatus which appeared in our pages on Feb. 27, is Dr. H. E. Jenkenan, of Utrecht.

ARUM: W. W. S. As you say, the spathe has not decided whether to retain its leafy condition or to become white, like a petal. As it is, it is half one half the other. The flower looks as if it had experienced a check at some early stage of growth.

BLACK ORCHID FROM MALAYA: Goodwyns. We are quite unable to say what this is. It may be a *Bolbophyllum*. It will want considerable heat, and abundance of water when growing.

BOOKS: *The Pictorial*, by G. Gordon, published by H. G. Bohn, Henrietta Street, Covent Garden, 1880. *The Forester*, by J. Brown, revised by J. Nisbet; published by W. Blackwood & Sons, Edinburgh and London.

CHRYSANTHEMUMS FOR FLOWERING IN THE OPEN: W. H. A. See the calendar article for the Flower Garden in our issue for March 6, 1897.

INSECTS: J. L. The soil is swarming with Daddy-long-legs grubs ("Leather Jackets"). You will never be able to grow Iceland Poppies nor anything else in it. Carefully remove it all and burn it, and replace with clean stuff. R. McL.—F. A. True weevils, very destructive. Trap them with slices of Carrot or Potato, and catch them at night.

JAPANESE CHRYSANTHEMUM: A. V. Very remarkable, but perhaps hardly so appreciable in March as in January.

NAMES OF FRUITS: H. J. Wheeler. Apples: 1, appears to be a well-ketp Blenheim Orange; 2, Striped Beefing.—J. B. T. Dutch Mignonette.

NAMES OF PLANTS: Correspondents not answered in this issue are requested to be so good as to consult the following number.—S. C., Japan. We are pleased to be able to render assistance to one at such a distance, but specimens sent loose in a letter were smashed so as to render identification diffi-

cult. No. 1, which you say you have as *Cyrtidium Hookeri*, is the much rarer *C. purpuratum*; No. 2, *C. javanicum*; No. 3, a very fine variety of *C. insigne*.—J. S. M. *Daphne laureola*.—R. M., *Southampton*. 1, *Goldfussia leucophylla*; 2, *Epipactis pinnatifida*; 3, *Fragragus pumilus auro-variegatus*; 4, *Ilex crenata*, a small Japanese Holly.—*Brighton Court Hort. Co.* A very fine form of *Dendrobium nobil*, large and very brightly-coloured, a good feature being the colouring at the backs of the petals.—L. L. Cattleya *Trinacri delicata*.—W. E. The white one is *Odoatoglossum crispum*; the spotted a very pretty form of *O. Andersonianum*.—A. P. 1, *Cymbidium pendulum*, illustrated in the *Botanical Magazine*, t. 387, as *Epipedium aloides*; 2, *Alousa incifolia*.—E. A. Z., *Brighton*. A very pretty variety of *Dendrobium nobil*.—W. M. *Juniperus sabina*, very poisonous.—C. W. Z. 1, *Dentaria glandulosa*; 2, *Scopolia viridifolia*.

PLANTS FOR WEST OF SCOTLAND: W. H. M. *Enkianthus japonicus*, *Rhus vernicifera*, *Nandina domestica*, and *Gleyera japonica*, are sufficiently hardy if afforded protection against the winds that blow from the colder "airs." *Troscirema indivisa*, and *Lagerstromia indica* are too tender.

ROYAL GARDENERS' ORPHAN FUND. We have the pleasure to acknowledge the receipt of the sum of £1. from Mr. G. Garner, Canal Park Gardens, Southampton, to aid of this charity.

SEA-KALE RUNNING TO FLOWER WHEN 3 INCHES HIGH AND FORCED: *Perplexed*. You omitted to cut over every crown at the ground level last spring when the forcing was over. It is tough, and takes a long time to cook because the warmth with which you force it—60° to 65°—is nearly 20° too low, it therefore grows very slowly. By-and-by it will grow at that degree of warmth and less, but out of season more heat must be employed.

STACHYS TUBERIFERA: A. C. Plant at any time during the present month in shallow drills, covering the tubers with about an inch of soil. Let the drills be about 10 inches apart, and the sets 6 to 8 inches. Nothing more is needed during the season but to keep the ground clean. The tubers are fit for use in late autumn and winter, and they should not be long exposed to the air before cooking, or the colour will be bad.

TWELVE VARIETIES OF CHRYSANTHEMUMS FOR MARKET PURPOSES.—*Précocité Delaux*, *Mille*, *Thérèse Roy*, *Vivande Morel*, *Chas. Davis*, *Louis Bechner*, *Florence Davis*, *W. H. Lincoln*, *Canary Yellow*, very late; *Source d'Or*, *Bouquet Fait*, *Cullingford*, *Hyecroft Glory*. If you like incurved varieties, choose any of the *Queen* and *Empress* section, *John Salter*, *Barbara*, *Jardin des Plantes*, &c.

VINES AFTER TEN YEARS' CROPPING: *Perplexed*. We imagined that the mistake practice of affording Vines the carcasses of animals as plant-food was long since exploded. It is far too strong a food for the Vine, or, indeed, any kind of plant; and doubtless if you will examine the border where the cation lies buried, do some of the Vines will be discoverable. Clear out the border entirely, covering the soil with quicklime, and then with 2 feet of sweet mould—it will make in a few years a dressing for your lawn, or a quarter of the kitchen garden that is in need of manure and deep trenching. Vines for early forcing should be in vigorous health, a state not consistent with the absence of roots in the inside border. The whole of the arrangements seem to require overhauling. It may, indeed, be found necessary to plant new Vines, as well as make new borders.

COMMUNICATIONS RECEIVED.—W. B. U. D., Berlin.—Prof. K. and B. Berlin.—W. B. U. D., Berlin.—Prof. K. and B. Berlin.—H. M. R. L. H.—J. J. J. J.—W. F. L. L.—Agri-Horticultural Society of India.—Captain Walker and W. C. week.—B. S. Williams—J. Carter & Co.—G. H. M.—H. C. F.

CONTINUOUS LARGE INCREASE IN THE CIRCULATION OF THE "GARDENERS' CHRONICLE."

IMPORTANT TO ADVERTISERS.—The Publisher has the satisfaction of announcing that the circulation of the "Gardener's Chronicle" has, since the reduction in the price of the paper, increased to the extent of more than 90 per cent., and that it continues to increase weekly. Advertisers are reminded that the "Chronicle" circulates among country gentlemen, and all classes of gardeners and garden-lovers all over the world, and has a specially large foreign and colonial circulation, and that it is preferred for reference in all the principal libraries.



THE

Gardeners' Chronicle.

SATURDAY, MARCH 20, 1897.

SOWING AND TRANSPLANTING.

THE season has arrived, and this year somewhat earlier than usual, when the cultivator must take advantage of every occasion when (or if?) the dry state of the surface-soil permits, to prepare it for the reception of seeds of many kinds of garden crops, and of plants and tubers. This preparation consists of pulverising the clods left by the winter, digging by means of the digging-fork, mattock (the three-tined mattock used in Kentish Hop-gardens—a very handy tool), and heavy hoe. The idea is to bring every particle of the tilth, or “fill,” into contact with the air, not a difficult matter after a frosty winter, and when the usually drying winds of March have acted on the purposely rough surface left at the winter digging or trenching. The amount of labour spent in the operation varies a great deal, it being usually a light job on light loams and peaty soil, and heavy on clayey, tenacious loams, or those in which the water-level is at but a small depth; and in the case of the latter, it is seldom that one operation is sufficient to provide the needful fine tilth that small seeds and plants must be provided with if success is to reward the cultivator's efforts.

In the case of land, which when dug was laid in ridges, the latter have to be levelled and spread about, not a difficult matter even with the stiffest soils if the frosts have been severe, but one that requires much labour if the winter has been wet and mild. If the ridges run north and south, the sides are equally dry and amenable to the pulverisators, but it is otherwise when these run east and west, the sunless slope being usually wet at an early part of the spring; and in the case of stiff soils, it must be levelled and allowed to lay exposed to sun and air for a week or longer time, ere it can be incorporated with the rest of the surface-soil. Hence, to form ridges in this direction is a mistaken practice on almost any kind of soil that would be better replaced by flat-digging or trenching; it is also inimical to early growth if Potatos are set in furrows running eastward. Some of the seeds sown on land thus early prepared, consist of transitory crops in the sense that for convenience sake in some cases, and for ease of protection from birds or frost in others, the seeds are sown somewhat thickly broadcast, or in drills in beds, the seedlings being transplanted when of sufficient size to be readily handled.

In this manner, Cabbages, Kales, Brussels Sprouts, Savoys, and Cauliflowers, are raised, but there are no other reasons than those named, why in gardens with sufficient fallow land, and where very close cropping is not called for, these seeds should not be sown where the crops are intended to mature, thus saving

the labour of transplanting and watering, and ensuring stronger and more vigorous plants. Transplanting is by no means essential, and is frequently the direct cause of sundry ills. The gardener seldom transplants the Turnip, the Beetroot, the Parsnip; and rarely does he transplant Parsley, Scorzonera, or Rhubarb, and he finds it better practice to sow Summer Lettuce where it will stand to mature, avoiding transplantation in this case because it favours bolting or running to seed. The successful transplanting of these plants, which have taper roots, involves the complete preservation of the tip of the root, an essential matter, by the way, with Ten-week and other Stocks. It is especially necessary with Beet, Parsnips, Parsley, and similar plants. But transplanting means an expenditure of labour both before and subsequently. Might we not avoid this and sow our Cabbages, Savoys, Kales, Cauliflowers, &c., in little groups of three or five seeds in line, and thinning to the strongest one in each patch? We should require to purchase seeds, perhaps, rather more freely, but their cost would be recouped by the lessened expenditure on labour, or rather, by the ability to employ the workman at jobs which otherwise must be let alone, or done very perfunctorily.

How many gardeners see in the check caused by lifting and trimming Celery when transplanting it from the seed to the nurse-bed, a reason for its untimely bolting? The plant is a biennial—that is, if it be sown one year, it will bloom the next; why, therefore, should it, in garden parlance, “bolt” in rudiment, unless it be, that by reason of the loss of its roots, nature makes an effort to multiply its kind in anticipation of early extinction? The bolting of Cabbages may be traceable to the same cause. Sowing in the trenches, or in the case of early Celery in small pots, would remove one of the causes of the partial loss of crop from bolting at an early stage of growth. A few seeds only need be sown in each pot, the weaker plants being removed, as it becomes apparent which is the strongest, transplantation taking place in June without disturbance of the roots. The same kind of treatment would suit the Leek, although this plant has such a wealth of roots, and is not tap-rooted, that the check inflicted by transplanting is but little felt, at any rate, it is not a cause of premature flowering. So much, as indicating the directions in which departures and innovations are called for in kitchen garden practice. When we come to deal with the plants of the flower-garden, we find none of those hard-and-fast rules prevailing so commonly followed in the former. Seeds are sown where the plants are to bloom, and thinning, more or less—unfortunately, it is commonly less—is carried out with results commensurate with the intelligent care exercised by the gardener in his treatment of them. But the rough treatment accorded—say, to a Broccoli or Cabbage plant in the stress of high summer, when it is dragged up by main force, it may be from a hard, dry soil, and set out in the blazing sunshine in a shadeless quarter or a field, is never meted out to an Aster, a Ten-week Stock, a Carnation, or even to the well-rooted Marigold, most gardeners knowing full well that failure awaits that kind of treatment of these plants. Pricking-off whilst still quite young, into pots and boxes, and early transplantation with a suitable ball of soil to each, is the usual practice; with the result that there is no premature flowering, and, barring the effects of the season, the plants flower at their looked-for season.

Reverting to the sowing of seeds of culinary vegetables, it is necessary, as formerly, to have an annual rotation or change of crop. Long-continued experience had taught the cultivator ages ago that a plant abstracts something from the soil, of which there is, comparatively speaking, but a limited amount—it may be nitrogen, phosphoric acid, potash, &c.; and that to continue to crop the land with the same species resulted in light crops and deteriorated produce.

Science has, however, ascertained by analysis of many of the plants the gardener and farmer grows, the chief constituents of these, and indicated those substances or those manures which present the greatest amount of the elements of which the plant consists. Does his plant show a large proportion of nitrogen, he can purchase nitrate of soda, or make use of rich manure from the fattening oxen-sheds (not cow-manure, that being notoriously deficient in nitrogenous matter). Is it lime of which the plant-analysis shows considerable quantity? he has then crude lime, or the more easily assimilable super-phosphates—either bone or mineral. Is a plant rich in potash as, say, the Strawberry and the Potato? he can apply that substance direct to the crop in one or more top-dressings afforded during the growing season.

Having all these and other readily-applied aids to field and garden culture, the reason for rotation has become less urgent; and the gardener, for example, who has a limited area of “south border,” and yet is desiring to have early Strawberries, Potatos, Tomatos, and Cauliflowers, may rest assured that he may crop this land for many years without changing the position of any one of them, and without the land becoming “sick,” if he will only afford each kind of plant its proper food, and carry out the proper methods of cultivation which experience shows the plant requires. Only in the case of Peas can continued cropping of one quarter in a garden be overdone, the amount of nitrogen left in the soil by the roots rendering it at least unfitted to maintain a crop of leguminous plants of any kind. To restore such land to its normal condition it is prudent to grow upon it such plants as will make large demands on the nitrogen stored up in it, and such are Cabbages, Cauliflowers, Onions, and Celery, among the commoner vegetables.

NEW OR NOTEWORTHY PLANTS.

MICHAUXIA TCHIHATCHEWII.*

THE technical description below given, together with the illustration (fig. 53), will suffice to indicate what a noble plant is here offered to the cultivators of hardy plants. The plant grows at an elevation of about 5000 feet in the Cilician Taurus, so that it may be presumed to be hardy. It is described as a biennial. The photograph, from which our illustra-

* *MicHAuxia Tchihatchewii*, Fischer et Meyer, *Ann. Sciences Nat. ser. 4*, l. p. 32. “Plant covered with spreading hairs, stem tall, brachy-dioicid, simple, leafy at the base, above continued in a long, subracemose spike; leaves dentate, the lower ones broadly oblong, untrifoliate or lobed at the base, narrowing into a short petiole; cauline leaves oblong and ovate, amplexicaul; flowers two to four (white), sessile, fascicled, lower fascicles shortly stalked, upper ones sessile, clustered; bracts broadly cordate, triangular, ovate, acuminate, clypeo-connate and appendages broad, and shortly lanceolate, very strigose, the appendages twice shorter than the sepals; corolla short, gibbous, sessile along the nerves, divided to the middle into oblong, linear, ultimately spreading segments.

“Habitat among rocks in the mountainous part of the Cilician Taurus, &c.”

“Plant 4 to 7 feet high, with a columnar spike 2 feet and upwards in height; radical leaves, with the petiole often about 1 foot long.” *Translated and adapted from “Biosis Flora Orientalis,”* iii. (1875), p. 892.

tion was taken, was sent us by Dr. Dammer, and was, we believe, taken on the spot by Herr Siehe, by whom seeds were introduced to the Erfurt firm of J. C. Schmidt.

EULOPHIELLA PEETERSIANA, n. sp., Krzl.*

This is indeed a great novelty—great in two senses—as a plant, and as a charming novelty. The size is about the same as that of a large *Grammatophyllum*, which this plant also resembles by some other characters. The rhizome produces many roots which creep over the trees. The creeping stem is 2 to 6 cm. thick (three-quarters of an inch to 2½ inches); the bulbs reach the enormous size of 25 cm. in length; they are a little compressed, and like the stems, are covered by the remnants of decayed leaves. The flower-stalk is said to be 100 cm. high (about 40 inches); it bears in a close raceme twenty to twenty-five very beautiful flowers of the size of 7 cm. (2¾ inches). The dorsal sepals and the petals are obovate, and rounded at the top; the lateral sepals are broadly-linear or oblong, with nearly parallel borders; the lip is large, the side-lobes broadly-oblong, the middle one divided into two little ones; the disc bears at the very base a three-lobed callosity; the radiating nerves are thickened throughout the whole lip, and developed—especially in the middle one—into sharp-angled triangular lamellæ. The colour is certainly a very beautiful rose-purple; the lip has a great golden-yellow blotch in the middle. Twenty or more flowers of such a size and such a bright colour must produce a very lovely sight.

About five years ago I learned from the late Johannes Braun—who died afterwards at Aotauanarivo—that he had discovered a giant Orchid not belonging to the Angræcoïds. He sent only two (huge) leaves of about 60 cm. in length. To judge from the bases of leaves of my specimens, I believe he saw the plant in question; the bases of the latter agreeing well with the leaves I have in memory. The plant was now found by Mr. Moceris, sent to Mons. Peeters at St. Giles, near Bruxelles. I have received materials from Mr. F. Sander and Mons. Peeters. *E. Krauslin.*

ORCHID NOTES AND GLEANINGS.

DENDROBIUM × SCHNEIDERIANUM.

This is one of the choicest of all the *Dendrobes* crosses, viz., *D. Findlayanum* × *D. aureum*, and is getting somewhat widely distributed. The raiser, Mr. Wm. Holmes, who was gardener at the time to Mr. Schneider, Fallowfield, and subsequently to the late George Hardy, of Pickering Lodge, Timperley, tells me that he has not been able to get up any seedlings since his first success at Fallowfield, although he has had capsules and even embryos in an infant state, but these all died. The first capsule produced a variety of forms, all more or less beautiful, but some of the varieties bring much larger prices when disposed of than others, particularly those possessing the deep orange tint so admirably seen in *D. aurea*, and which carry flowers of good size. No one flower is considered first-rate by an expert unless it is 3 inches in breadth, and has sepals, petals, and lip of a nice form and good substance. One of the most striking is in the collection of R. Ashworth, Esq., the Ashlands, Newchurch, Lancashire (gr. Mr. Pidsley). This plant has the habit of *D. Findlayanum*, and approaches it in size; only it has not the rich orange of *D. aureum*, which is noticeable in some varieties, neither is its lip puckered-in or "pinched," like that of *D. aureum*. The plant in question bore about a dozen flowers, and is in fine health.

The position of the sepals is singular, the centre one standing erect, the inferior ones instead standing at a depressed angle, as is frequent in *Dendrobes*, and sweeps round to a right angle. The flower shows a nice flushing, in which white and pink commingle; petals obovate, nearly white, unless at the extremity

heavily tinted with blush; their breadth 3 inches, each individual petal 1½ inch by about ¾ in width. The lip is broadly and roundly ovate, two-thirds of its surface of a yellowish shade rather than an orange,

and having a broad margin of white, which stops short at the yellow lines. At the base are two crimson dots, and at the extremity of the limb is a pink-coloured blotch. *J. A.*



FIG. 53.—*MICHAUXIA TOCHIATA* WHITE; HARDY BIENNIAL; HEIGHT 6 TO 7 FEET; FLOWERS HEAVILY TINTED WITH BLUSH. (SEE P. 181.)

* *Eulophiella Peetersiana*, n. sp., Krzl.—Caulis longe prorepente, infra radicibus crebris arboribus affixo, crasso 2-6 cm. diam., apice in bulbum maximum transiente, omnino cataphyllis et supra foliis vestito; bulbo longo 25 cm. longissimo subcompresso vestigiis foliorum omnino annulato; foliis? certissime maximalis; scapo 1 m. alto valido; racemo plurifloro (20-25) bracteis; floribus magnis roseo-purpureis 7 cm. diam. sepalo dorsali petalibus subimbratis subulterioribus a basi satis lata obovatis antice rotundatis, sepalis lateralibus basi ipsa partim connatis late ligulatis apice obtusis; labelli latissimi lobis lateralibus lato oblongis ciliatis, intermediis multo minore bilobis, callo basali carnosio tripartito, lineis per discum omnibus incrassatis antice in lamellas triangulas auctis, lamellis mediis maximalis antice acutangulis; gyno-stemio ¾ sepalis dorsalibus sequente. *F. Krauslin.*

(From a photograph taken by Mr. Siehe in the Cilician Taurus.)

A WELL-FLOWERED DENDROBIUM NOBILE.

We learn from the *Bradford Observer*, that at the residence of Mrs. Knowles, Hollin Hall, Moorhead, Shipley, there is a plant of *Dendrobium nobile* bearing at the present time 1134 blooms. The plant, which is a very fine one, secured a Certificate of Merit of the Bradford Paxton Society last year, but it is in infinitely finer condition now. It is practically circular in form, with a diameter of 5 feet. The correspondent who furnished the paragraph states

of the lip. During the winter other nearly white forms have flowered, including *V. teres aurora*, which has very large flowers, but not so good in form as the pure white one now in bloom. Whereas the large rosy-crimson form grown at Tring is constant in flowering with great profusion during the early summer months, the white or nearly white forms flower at odd times during the winter and spring, although they frequently flower again at the same time as the coloured variety. There promises to be a grand show

them. The species *D. Mezereum* is a native of Britain and other north temperate countries, and is well known as a dwarf shrub with fragrant flowers, which appear in February and March. Its three varieties, viz. *album*, *rubrum*, and *autumnale*, are less common in gardens, although meriting cultivation for the sake of variety.

Our figure was taken from a photograph of a plant growing in the garden of W. Marshall, Esq., Auchinraith, Bexley, Kent.



FIG. 54.—DAPHNE MEZEREUM ALBUM, GROWING IN MR. MARSHALL'S GARDEN.

that five years ago the plant was in wretched condition, with scarcely a decent pseudo-bulb; by skilful treatment the gardener, Mr. Moorby, has not only resuscitated the plant from certain death, but brought it to its present condition. There are four more plants in these gardens, and the aggregate number of blooms on the five plants amount to 2758. I think for a smoky district like Bradford, Orchids will thrive and flower well if treated properly.

VANDA TERES CANDIDA.

In the house devoted entirely to *Vanda teres* in Lord Rothschild's gardens, Tring Park, a beautiful snow-white form of *Vanda teres* is in bloom, the only colour in it being a tinge of yellow on the side lobes

this year, and the immense plants of *Phalenopsis* in the adjoining house are now safely over a protracted, if not severe, winter, and also promise well for bloom.

DAPHNE MEZEREUM ALBUM.

The genus *Daphne* consists of about forty species, some of which are evergreen and some deciduous, with generally fragrant flowers. Some of the species are tender in this climate, as, for instance, *D. indica rubra*, figured in our last issue as grown at Berkeley Castle; and others, like the subject of our illustration (fig. 54), are so hardy that no frost hurts

NOTES ON NARCISSI.

(Continued from p. 152.)

PLANTING, LIFTING, &c.—The importance of early planting is not generally understood. It is a convenience to the dealers to send out, and to gardeners to receive, bulbs of *Narcissi* with those of *Hyacinths* and *Tulips* in October; and a large dealer lately told me that he reckons to receive fully half his orders for *Narcissi* in November and onwards. It is outside my subject to discuss the cultivation of spring-flowering bulbs at large, but there are reasonable grounds for the opinion that they are commonly planted far too late. It is not easy to understand

how rooting can be comfortably accomplished when they are put into soil chilled by autumn frosts and sodden with autumn rains. The simple experiment of planting one row or clump of bulbs in August, and another from the same stock of the same variety in October, and observing the respective plants, flowers, and increase, will prove a convincing argument, certainly as regards Narcissus. It is to be remembered that the bulb has a twofold task of reproduction—the perfecting both of seed and of those independent buds which we call bulbs. This double work it cannot accomplish in full, unless thoroughly established with an ample equipment of feeding-roots before winter. It has been proved in my own garden that bulbs planted in August will yield offsets of full blooming size, while the same variety planted in October will scarcely give detachable offsets. Moreover, the bulbs deteriorate by waste of their vital stores if kept out of ground more than about two months. The Narcissus naturally emits fresh roots very soon after flowering, *N. poeticus* in particular often making roots of considerable length by the first week in July. The bulbs can be said to be at rest only during the short period of the yellowing of the foliage; they should be lifted before it disappears, both to anticipate the fresh growth, and to prevent injury by the fork—the leaves, of course, indicating their exact position. The precise date will vary with locality and season, but my own lifting is always completed by the end of June. The foliage should be cut off at the neck, and the bulbs not exposed to the sun, but spread out thinly to dry in cool, airy quarters. They heat quickly if left in heaps, and the slightest heating is sufficient to destroy their vitality. In about three weeks they will be dry enough for the old roots to be removed, and the offsets separated without tearing the basal plate. With some kinds—e.g., *N. maximus*—great care is needed to prevent this injury, and it is sometimes safer to cut than to break away the offsets. The old roots, too, of some sorts are wiry and tough; to avoid injury to the base the pull in removing these should be upwards, i.e., towards the apex of the bulb, and not downwards—or they may be cut off. It is a temptation to increase the stock of choice varieties by forcibly separating small offsets which are still contained in one tunic with the mother-bulb, and attached to it by a large segment of the base. Such young offsets have a large number of delicate roots embedded in and nourished by the old bulb, and to detach them prematurely is hurtful, and analogous to the cutting away of Strawberry runners, &c., before they are independently rooted. The criteria of excellence in Daffodil bulbs are, weight for size, a clear bright skin, and a base small in proportion to the largest circumference of the bulb, with a large quantity of fine, onion-like roots. Where bulbs are not home-grown, but purchased, the small base may be taken as a proof that the roots were of this character. Here it may be observed that a change of stock is extraordinarily beneficial in the case of Narcissus; a grower literally by the million for the cut flower market has assured me that he was satisfied it would well repay the cost of carriage to exchange his entire stock annually with some distant grower.

Annual lifting and replanting is here prescribed only for the high cultivation of the Narcissus, i.e., in separate quarters, and for the production of the finest possible flowers. For such results it is necessary; but in good soils undisturbed clumps in mixed borders or in grass will retain a decorative beauty for many years.

August, as already said, is the best month for planting, but the latter half of July is not too early for beginning with the varieties of *N. poeticus*. In the large flower-farms, planting is usually done by the plough; in private gardens, the quarter should be divided into long beds, not exceeding 4 feet 6 inches wide, somewhat raised, with dug-out alleys in wet soils. In a well-known Daffodil nursery, the following Dutch fashion of planting is now adopted. The first of a series of narrow beds has the whole of its soil removed to the depth at which the base of the bulbs is required to be buried, a sprinkling of bone-meal is

given, and the bulbs set out in rows on the surface. This bed is then filled in from bed No. 2, and so on through the series. This method can be followed only in such loose sandy soils as are easily handled, on others the bulbs must be either trenched or dibbled in. My own collection—a very large one—is always planted with a dibber of about 7 or 8 inches insertion, the bulbs being first stood in lines drawn 9 inches apart, and the narrow way of the beds, for convenience in hoeing. The bulbs need not be more than 2 or 3 inches apart in the rows. With practice, there need be no fear of their being "hung," and they can in this way be planted very rapidly. On my own soil I find it beneficial in dry weather to consolidate the ground by treading after planting. The subsequent cultivation consists of hand-weeding, surface-manning if necessary, and frequent hoeings after the plants appear. *G. H. Engleheart.*

CULTIVATION OF ALPINE PLANTS ON WALLS.

MANY tender alpine plants which are difficult to grow here will only succeed in chinks of walls or crevices of rocks. In England, thanks to a damper atmosphere, plants from alpine pastures or glacial moraines do well, while a great number from high altitudes damp off, and cannot withstand the winter. Especially is this so with species bearing dense rosettes, which rot easily; for instance, *Androsace helvetica*, *glacialis*, *pubescens*, *pyrenaica*, *cylindrica*, *Charpentieri*, *Heeri*, *Draba tomentosa*, *Eritrichium nanum*, *Campanula pauciflora*, *Saxifraga cæsia*, *squarrosa*, *aphylla*, *steno-petala*, and certain species of *Sempervivum*, as well as plants which cannot stand damp, as *Campanula petraea* and *Tchihatchewi* *isatidea*. These are all pretty, and such as all would like to bloom. Many English growers try to keep alpine plants through severe winters. They cover them with a sheet of glass, or even put them in a cold frame to protect them. For years I have advocated the plan of growing delicate plants on walls, and I know that in England, where tried, it has been found more or less successful. A vertical position is not always so suitable for plants as it seems. Many of the more tender plants will grow upon rocks; for instance, *Ramonda*, *Haberia rhodopensis*, *Omphalodes Lucicæ*, and many other pretty species grow naturally in such habitats. *Saxifraga longifolia*, *Cotyledon cæsia*, *squarrosa*, *calciflora*, and many neighbouring species, grow naturally in rock fissures. Also *Tchihatchewi isatidea*, a beautiful Crucifer, with scented rose-coloured flowers; *Matthiola valisaiaca*, a saxatile *Campanula*, and many other pretty species from mountain rocks, succeed here at Geneva on walls, where the sun is powerful, and the winter less damp than in England. The well-known and rare *Saxifraga florulenta* can also be grown thus. It grows on the outer wall of the Beissier garden at Valleyres-sous-lames (Vaud), it has been there since 1877, and seems to be quite established. Many plants of it bloom and seed (the plant is an annual, and dies after fruiting). Those who know the difficulty of growing *S. florulenta* will appreciate this. Other species might be cultivated in this way, such as *Eritrichium nanum*, which likes a dry and sunny place, dry in winter, moist in summer. On the high Alps, on steep rocks and dry nooks, this plant grows in light, sandy, pebbly soil, poor in humus. It does well in the sands of glacial moraines or the rocky debris of sharp slopes. It is found plentifully on dry peaks of the granitic Alps, but only in poor and arid soils. It dies, with us, not only from damp, but from a too rich soil, which produces too robust a growth. Ten years ago I recommended an English friend to plant the species in the chinks of a wall, in full sun and a dry place, with very little soil about its roots; this he did, and some years ago I found he had a nice lot of the plant in full bloom. Unfortunately, I can only get the plant to seed when grown in sphagnum, but at Bourg St. Pierre, in the Valaisian Alps, it seeds and 1 propagates itself freely. Possibly in England it would fruit better, the air being more favourable.

Among other plants which under these circumstances might thrive in England are the saxatile *Androsace* and *Campanula*, *Antirrhinum azrinum*, and *glutinosum*, *Sempervivum*, and other species, which dislike damp. There is no need, when placing plants in a wall, to insert soil; water, air, and the erosion of the stone by the roots, with the necessary amount of moisture, provide all the nutritive ingredients necessary for saxatile species, many of which are certainly killed by too abundant nourishment. *H. Corveon, Jardin Alpin d'Acclimatation, Geneva.*

FORESTRY.

TREATMENT OF PLANTATIONS WITHOUT REGULAR THINNING.

THE 20-foot openings mentioned in my former paper, 1894, were cut in May, 1895, in the line of the rows of trees as planted, leaving 80 feet of the plantation untouched between each pair of openings. The only trees taken were Larch. In August the dead branches that were not worth faggotting were raked into the middle of each opening, and burned by a careful workman. He then made three rows of pits 6 feet apart in each opening with a rooting tool, and picked out the roots of the trees which had been cut down. Early in November he and I planted Silver Firs at 12 feet apart in the centre row of pits, and Beech in the others. A few Silver were planted in parts where there were forest trees. The total number of trees planted was 200 Silver Firs and 540 Beech.

In June, 1896, I only found four trees dead out of 740. This is partly owing to the earth in the pits being moist with the autumn rains, partly owing to shade from the trees on each side, though the weather continued very dry for a period of four months. My workman missed clearing up one of the openings, and in this one the young trees did not do so well, as the dead branches were not burned, nor pits made in the summer. It is an expensive way of working, but I think it is worth the expense to get good growth. I also hauled the poles down in an expensive manner. Four men, with two ropes round the head and foot of each pole, dragged them down to the roadside, without injuring the bark on any of the trees that were left standing. Some of the trees by the side of the road through the plantation had the bark torn off in strips more than 2 feet long by the hauliers who removed the poles after the sale.

The following is a statement of the cost of cutting, burning, hauling, &c., and details of receipts for material sold:—

Labour, cutting, and lopping poles	..	£6	6
Advertising sale	..	4	0
Burning dead sticks and making pits	..	0	13
740 trees	..	1	6
Planting	..	1	5
Faggotting	..	1	9
		£14	13

Received for Poles, 20 dozen and 7	..	£21	5
Faggots	..	1	7
Total receipts	..	£22	13
Cost	..	14	13

Net receipts for about an Acre of Poles,
38 years planted £7 15 11

A miserable return from an out-of-the-way plantation, with a steep hill on both sides. Callington is the nearest town, about four miles distant. *Henry Rogers.*

TYPES OF BRITISH WOODLAND.

(Continued from p. 20.)

OAK WOODS AND COPSES.—Of all British forest trees, the Oak is probably the best known by the public at large, if not by sight, at least by repute. "Hearts of Oak," "The Haunted Oak," and numerous other terms and expressions found in poetry and fiction, testify to the familiarity which exists between

this tree and those who know next to nothing of trees in general. The Oak has always been regarded as an emblem of British character, and perhaps many regard it as something as peculiarly British as our roast beef or our fox-hunting, unmindful or ignorant of the fact that the Oak might be quite as appropriately termed French or German as British. But in spite of this, it cannot be denied that Oak woods, or at least woods in which Oaks predominate, are the most typical of what may be termed the more natural or indigenous woods of England and Wales; for all our surviving fragments of old forests, whether parks or woodlands, consist largely, if not entirely, of this tree, and it makes little difference whether the site of the forest is located in the rich soil of the Midlands, or on a poor and exposed hillside in Wales. No soil or situation comes amiss to the Oak, for although it requires a deep and good soil to bring it to that size and maturity with which its name is usually associated, yet it will live and assume a healthy appearance on the thinnest soil, or in the crevice of a bare rock. As a timber tree, however, it is only on the better soils that we meet with it to any extent, and on clays and heavy loams in most parts of the country it prevails in all the older and middle-aged woods. It seems very probable that the mode of raising the majority of Oak woods in olden times was that of sowing the acorns on the spot, although many woods doubtless date back to the old natural forest which existed at one time in every district, being simply fenced off from the grazed or cultivated land as occasion arose. Many of the latter are practically in the same condition at the present day as when enclosed, renewing themselves from acorns, and mixed with Hazel, thorns, brambles, and various other shrubs indigenous to the soil. The presence in many of them of old pollarded stumps, confirms this view of their origin, although in the majority, modern views and methods of treatment have brought them from their unsophisticated wildness into closer resemblance to planted woods. To the naturalist and lover of Nature unadorned, this kind of woodland is regarded with great favour, while it makes the best possible game cover. But it seems a pity that good fertile land, as many of these woods stand on, should not be made more profitable for the owner, and add something to the national wealth, which with more economical treatment, they might easily do. The planted or sown woods are generally fairly well stocked; with a sprinkling, or in some cases, fair crop of Hazel underwood, the latter being regularly cut over for hurdle wood, &c. Like most British-grown timber, however, the trees are usually too knotty and branched from unrestricted growth, an evil which at one time had its compensating advantages in the shape of knees for ship-building and bough-bark for tanning; but the demand for the former has almost disappeared, and the value of the latter greatly decreased of late years. Oak timber, like that of most other trees, is now of most value when straight and clear, and a little drawing up when young is as necessary as with other species if good results are to be obtained. Owing to its comparatively slow growth, Oak has been little planted of late years, as a glance at our young plantations throughout the country will prove. To those looking for quick returns, Oak is not an attractive species, perhaps, but its timber is never likely to want a ready market when of good quality; and those who plant, as most planters do, for a coming generation, would do well to give the Oak a place in the soils which suit it. On lighter soils, *Q. sessiflora* is considered the best adapted for producing good timber, although in certain districts it is rarely if ever seen. In the New Forest, we believe, it is the prevailing species; but *Q. pedunculata* in most districts is most common, and succeeds best on heavy ground. The practice of barking Oak continues, for the low price obtained still pays for the felling of the trees, and this is a consideration where a large quantity is in question, although the seasoning of barked timber is rarely so well done as when the trees are winter-felled. *A. C. Forbes.*

(To be continued.)

ENGLISH ORCHARDS.

(Continued from p. 174.)

FORSYTH, &c. — Much of the same state of things exists in the orchards of Somerset, which ranks next to Hereford in the area under fruit trees, and with reference to these it is stated, "Somerset, all things considered, is one of the most fertile counties I have yet passed through, and in the matter of cloasts there is also little room for complaint. Yet, curiously enough, several kinds of hardy fruit have to be imported—Plums and Damsons chiefly from Worcestershire, and Cherries from Kent." Also "great areas are devoted to elder Apples, which produce heavy crops; but they are of little value, and not until there is an immense improvement in the manufacture and increase in the consumption of the beverage can there be any profit from elder." Worcestershire has the next largest acreage of fruit, and with regard to the farm orchards we are told—and this is the last extract from the reports that I shall trouble you with—"In no case did I find the average tenant farmer almost of the times in the matter of orchard management. These men's ideas are immovable, as their actions are generally confined to the practice of sticking in a tree in the position occupied by one that has fallen into decay. Pruning appears to be quite neglected by them, and the trees in the majority of cases are in such an unsatisfactory condition that no possible system will so soon as restores the fertility of the orchards as to ensure fruit of such quality as can compete in the open market with foreign productions." I should like to speak in some detail of the condition of the orchards of Beds, Berks, Bucks, Essex, Cambridgeshire, Lincolnshire, Notts, Norfolk, and other counties; but time presses, and I have already said sufficient to show that the English orchards are, in the majority of cases, in a condition that renders it impossible for the trees to produce

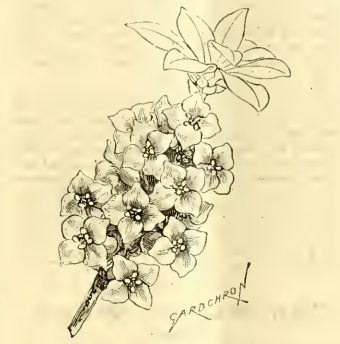


FIG. 55.—FLOWERS OF DAPHNE MEZEREUM ALBUM. (SEE P. 183.)

fruit worth sending to market or worthy of the purchaser's attention, should the owner be unwise enough to consign it to a salesman.

PROSPECTS OF RENUNERATIVE CULTURE.

It might well be asked at this point whether the possibilities of profitable fruit culture in England are such as to justify a serious attempt to renovate the orchards capable of being brought into a productive state, and replace those where renovation is practically impossible with new ones. In case this question should be in the mind of any member of the audience I will at once give an answer, and this must be to the affirmative. Assuming fruit to be an important article of food, and a plentiful supply over the longest possible period desirable, it will be readily admitted that it would be very much better for the farm-orchard to be in a condition to supply the household with an abundance of fruit during nine months of the year than for the farmer to have on his holding a large number of unproductive trees, and have to purchase at the nearest town or village foreign fruit, either fresh, dried, or in tins. This is not the principal aspect of fruit growing, but it is one that deserves the instant attention of both the tenant and his landlord, and also of the several bodies which exist for the encouragement and improvement of rural industries. The most important aspect of orchard management is unquestionably the production of fruit for profit, and with reference to this, I have no hesitation in stating that, carried out on proper lines, it will give a good return. In making this assertion, I must not be understood as being in sympathy with those who would have us believe that it is possible to make a fortune in a short time from a few acres of fruit trees. What I submit is, that under proper management, orchards will at least as profitable a proportion to their area as any other crop that can be grown. They should give a far greater profit than the best of the farm crops, and add materially to the value of the holding; but it will suffice for the purpose of my argument to submit that while worthless orchards are

unprofitable, those in good condition give an ample return for the initial outlay, and the expenditure incurred in their management. There are, of course, a large number of both tenants and landowners who are ever ready to contend that there is no profit in orchards, and to declare "that you cannot restore the prosperity of agriculture with a few pots of jam." But these will also tell you that "the farmers cannot be made rich with a few pots of jam, or a few fowls," and such catchy phrases may appear to those who have bestowed no thought upon the subject to dispose of the question. Let us see whether the culture of fruit, the making of jam, and the keeping of poultry would, if properly carried out, help the farmer to contend with the difficulties inseparable from the low prices of his staple crops. I shall refer to the results of a large array of figures, but shall confine myself to those found in last year's official returns, as they are quite sufficient for my purpose. These show that the value of imported fruit was £5,300,069; of poultry, £605,458; of eggs, £4,184,507; and of hutter, £15,354,085, making the respectable total of £27,255,648. I do not suggest that the whole of this sum could have been retained in this country, but I submit that a very large proportion would have been, had those concerned fully informed themselves in past years as to the possibilities of the demand for these so-called minor products, and the best means of supplying them in abundance, of good quality, and in the most attractive and convenient form. I am now only concerned with the amount we pay the foreign growers for fruit, for the greater part of the supply might, and indeed, should be, produced in our own orchards and plantations.

With regard to Apples imported last year 6,177,192 bushels, of the declared value of £1,523,471, and I submit that a very small proportion of this enormous quantity should have been required from the foreign and colonial orchards. To ease anyone may be inclined to question this assertion, I will at once state that in no other country are the conditions more favourable to the production of Apples of the finest quality than are those which obtain in England. For proof of this, it will suffice to point to the splendid Apples that are produced in gardens where the trees receive proper attention, even in districts that are not particularly favourable to hardy fruiting. It is not the soil or the climate that makes us so largely dependent upon the foreign growers for our fruit supplies, but the apathy and ignorance of our cultivators. The lamentable state of our orchards is one proof of this, and the wretched manner in which the principal part of our fruit is placed upon the market is another. Nurseries have a neat care in gathering, lifting, and packing, but fruit is sent to market without regard as to the season, and, in consequence, the late Apples that may be had in perfection until March or April, are sent to market in the autumn, with the result that the prices of the early varieties are unduly depressed, and the markets are almost wholly deserted upon foreign importation after the first of September.

In formulating a scheme for the improvement of English orchards it will be convenient to divide them into three groups. The first to comprise those consisting of trees so old and exhausted that their restoration to vigorous health and productiveness is impossible; the second, orchards in which the trees are in robust health, but represent inferior varieties; and the third, those orchards which contain moderately young trees of good variety that have been allowed to become unproductive through neglect. There is but one way of dealing with the orchards belonging to the first category, and that is to sweep them away and to replace them with new orchards formed on some other part of the farm. To attempt to reawaken worn-out orchards by planting young trees in the positions that were occupied by those which have died out, or as so generally done, is worse than useless, for it is a rare occurrence for trees so planted to be of any value as fruit producers.

In dealing with orchards containing healthy trees of inferior varieties, the obvious remedy is to graft them with varieties that are well known for their productiveness and the high quality and good appearance of their fruit. In the western counties, where the soil is heavy and the trees generally cultivated in orchards, as proved by the remarkable development of trees of perry varieties, I would suggest that a considerable proportion of the healthy trees now bearing fruit only suitable for the perry press, should be grafted with such excellent varieties as Louise Bonne of Jersey, Beurré Châtaign, Marie Louise, Beurré d'Anjou, Beurré d'Angoumois, Marie Louise, Marie Louise d'Uccle, and Josephine du Malines, care being first taken to ascertain by inquiries made in gardens which of the varieties will succeed in the district. Stewing Pears are not less profitable than dessert varieties, for Calville, Fovele's St. Germain, and the Verulam, which are the best of them, are good bearers, and the fruit is available for the market during a period of six months, commencing with Getober, and can be sent long distances without special difficulty.

From the Apple orchards the hundreds of inferior varieties, whether belonging to the dessert, cooking, or cider societies, should be swept away and replaced with others that are pure bearers, and produce fruit of good appearance of high quality, and of these there is an abundance. I would advise, also, that the area of many cider orchards, which, in the western counties, form, it is computed, about four-fifths of the whole, be reduced by one-third, the remaining two thousand acres with dessert or cooking varieties. Cider is an excellent beverage when properly made, but we are now concerned with making the orchards as profitable as possible, and it is obvious that Apples worth from £10 to £20 per ton are more profitable to grow than Apples worth £1 per ton, and it would not realise more than £1 per ton. It is also evident that to obtain a full return from our orchards,

farmers must grow both late and early varieties, and adopt some inexpensive method of storing the fruit of the former until after the early supplies have been exhausted. The most profitable of the cooking varieties are Bismarck, Ecklinville, Dumelow's Seedling, Gascoyne's Scarlet, Golden Spire, Lane's Prince Albert, Lord Suffield, Newton Wonder, Pott's Seedling, Tower of Glamis, and Warrant's King. Then of the dessert varieties I would recommend Bloemlin Pippin, which is slow in coming into bearing when planted as an orchard standard, but grafted on large trees it quickly becomes productive, and the fruit, by reason of its handsome appearance and high quality, invariably commands a good price. Cox's Orange Pippin, one of the most profitable of dessert Apples in districts favourable to it, and when the fruit is properly marketed; Duchess of Oldenburg, an early variety which has a short season; Devonshire Quarrenden, useful for planting within a short distance of the market; King of the Pippins, and Worcester Pearmain. These form but a small proportion of the Apples in the catalogue, but before we can make our orchards profitable, we must follow the example of the American growers, and instead of planting two or three trees each of a hundred varieties we must plant a hundred trees each of a few varieties, and these of the very best.

(To be continued.)

NURSERY NOTES.

MESSRS. D. & W. CROLL, BROUGHTY FERRY.

Those who have had the pleasure of seeing their Roses in the first rank at our horticultural shows are naturally desirous of seeing the plants at home; hence, towards the end of the month of January last, I accepted the cordial invitation of Mr. James Simpson, the managing director of Messrs. D. & W. Croll, the famous Rose growers of Broughty Ferry, Dundee. I have seen their Roses on various occasions, and heard of medals, cups, &c., won by them at Newcastle, Oban, Aberdeen, winning over fifty first prizes from some half a dozen acres of ground situated within sound of the sea or the mouth of the river Tay, which is probably rougher and more generous with its distribution of salt spray than the ocean itself.

It so happens that my last day among the Roses was in that unrivalled Rose-growing centre, Colchester, at the famous Colchester Rose Show, with the two Cants—uncle and nephew, and Mr. Prior.

With fragrant memories of those wonderful Roses in the West, I turned to Broughty Ferry Rosary with considerable misgiving. My first question to Mr. Simpson was as to what Teas he found able to withstand the salt spray, and such storms as wrecked the Tay Bridge only a short way off? Before he had time to answer, we were walking up the rosary, and past a brake of *Marchalé* Niels already pruned, the long shoots pegged down within an inch or two of the ground, and the spaces between top-dressed with rich half-rotted manure. The date of these proceedings was January 27, 1897. What protection do you give the tops of your Roses, Teas or others? The answer was emphatic—none. I have tried once or twice, with the result that those protected either were injured or killed outright, while those unprotected took no harm. I have, therefore, entirely ceased to cover or coddle, and truly not a handful of bracken or bough or any other litter was visible.

I remark in the weather reports that Aberdeen, which is about seventy miles further north-east from Broughty Ferry, has had the thermometer at zero since my visit. It would be interesting to know whether the Messrs. Cocker, the Rose growers near the granite city, cover their Roses or not, and if not, how the Teas, and especially *Marchalé* Niels, withstand the extreme temperature. Mr. Simpson is also a strong believer in early pruning; in fact, they were busy with pruning and top-dressing the Roses towards the end of January. He anticipates no harm from early pruning, nor early growth; the chief danger arose from copious bleeding when pruning was at all late. I have often contended that the time to prune was all as the mode or measure of it is largely a matter of locality. But I confess it was quite a surprise to me to find the pruning of Tea and other Roses in full swing on January 27, 1897. The Roses, however, looked pictures of health and full of promise of beauty and fragrance.

The seedling *Bat* is alone used as a stock for Teas, and young or yearling stocks are preferred. These take the buds on more readily and surely than stocks of larger calibre and greater age. Nothing could exceed the robust health and vigour of this fine stock of Tea Roses. The perennials looked equally healthy and vigorous. I understood that

not a few of the finest blooms were cut from maiden buds worked a few months previously, that is during the current season. In many cases, when buds broke into shoots and potential blooms, soon after insertion, the shoots of the stocks were pegged down close to the ground, thus throwing the force of the whole plant into young shoots of the bud, a plan that seems to answer better for the prompt development of truly maiden blooms than the entire removal of the Briar or stock shoots close to its union with the stock. Hence, in some quarters in these nurseries a twofold process of pruning was proceeding simultaneously, the removal of the wilding stocks, and the pruning back of the maiden shoots which had already maiden blooms of superb quality.

The process of planting seedling Briars and stocks was also proceeding briskly. Young directions, one break alone containing some 10,000 stocks; and others equally large, as well as large quarters, some of which were sown with seeds, and all of them finished with all the care of a choice Onion-bed. From the few plants left unsold that were observed, two facts were manifest, viz., that the Broughty Ferry Roses are equal to those coming from some 400 or 500 miles further south; and that with all the efforts of Rose-growers, the demand for good Roses in the North, as in the South, still exceeds the supply. Practically the varieties from North and South are identical, as will appear from the few examples cited from standards and yellow Roses grown here:—*La Belle Lyonnaise*, *Catherine Mermet*, *Gloire de Dijon*, *Jean Ducher*, *Madame Cusin*, *Marie van Houtte*, *Niphotes*, *Perle des Jardins*, *Rubens*, *Souvenir d'un Ami*, and *The Bride*. Of yellow Roses I may name *Belle Lyonnaise*, *Madame Welch*, *Celine Forestier*, *Marchalé Niel*, *Etoile de Lyon*, *Marie van Houtte*, *Gloire de Dijon*, *Perle de Lyon*, *Jean Ducher*, *Perle des Jardins*, *La Boule d'Or*, *Rive d'Or*, *Madame Bezar*, *Madame Caroline Kuster*, *Triomphe de Reims*, and *Madame Margottin*.

Mr. Simpson thinks if there is any difference in hardness between Teas and hybrid perennials, the Teas are the hardier. Like most of our more famous rosarians, the Messrs. Croll also believe in a change of land for Roses. The veteran rosarian of East Anglia was one of the first to rest his Rose-land with crops of Barley or Oats; and it was a special pleasure to find part of the rotation crops in the Broughty Ferry rosary consisted of Narcissus and other bulbous plants, all of which seemed to thrive admirably in the sandy loam which, with the aid of manure, grows many of the finest Roses in the country, as well as plants of the most promising quality. D. T. F.

THE WEEK'S WORK.

THE ORCHID HOUSES.

By W. H. WAIR, Orchid Grower, Burford, Dorset.

Cattleya-house.—*Cattleya gigas*, C. Warneri, and C. Rex, although they may be in active growth, should be kept in a moderately moist condition at the root till the flower-sheaths are perceived, when a gradual increase of heat and moisture are needed by the plants. There should not be a disturbance of the roots by repotting, the best time for this being at the season when the flowers fade and growth is finished, as then these Orchids send out roots from the base of the new pseudo-bulb. It is of importance to afford them every ray of light in order to bloom them satisfactorily; but all the same, if scorching of the leaves is feared, then some thin material must be used to shade the plants.

C. *Doniana*, and its variety C. D. *aura*, now starting to grow, may be afforded similar treatment, but a few degrees more warmth during their season of growth do good. Plants of *Cattleya Percivaliana*, which having recently passed out of bloom, will be emitting fresh roots, and then is the time to repot any plant in need of greater space, not delaying till the roots have grown much, or many of them will get injured. Most of the C. *Trianae*, are approaching the end of the flowering season, rendering more care necessary in affording water to the roots, as too wet a compost will rot the older roots. Till growth begins, it is safer to lean towards the dry side. Those plants of C. *Mendeli*, C. *Mossie*, and C. *Lawrenceana*, on which the flower-buds in the sheath are prominent, should be afforded rather more water at the root till the blooms expand. At this season *Cattleyas* should be examined every day for the destructive *Cattleya-fly*, careful watching at this period probably saving the life of some valuable plants. The fly almost always pierces the young

growths when these are a few inches high, producing an abnormal swelling at the base of the growth, and a tapering to the apex. When thus affected the growths make no further progress, and the only course to take is to cut off the entire growth and forthwith burn it, cure there being none.

Thunias.—*Thunia* Bousnoux, T. Marshalli, T. pulchra, T. Veitchiana x, T. alba, and T. candidissima, may now be shaken out of the old compost and repotted. In general, these plants are cultivated seven or eight together, in an 8 or 9-inch pot, which is a convenient method where space is limited. The pots should be almost half-filled with crocks, then a layer of turfy-loam, the rest of the space being filled with peat and moss in equal proportions. The advantage of having turfy-loam below the compost, is that the roots find their way into it just previously to the appearance of the flower-spikes, and derive benefit from it, and it affords vigour to the growth. To be successful in blooming these plants, they should be firmly potted, and afforded as much sunlight as possible; it is therefore proper to place them with the tips of the bulbs nearly touching the roof-glass of the stove or East Indian-house. The young growths revel in the sunshine. When the repotting is finished, let each bulb be secured to a neat stick; and for the next few weeks, or till growth is started, and the bulbs are making roots, water should be sparingly afforded, but afterwards it may be freely supplied, and quite re-established plants are benefited if diluted cowshed drainings be occasionally given instead of clear water. In the earlier stages, the young breaks are apt to get infested with thrips and a species of yellow-coloured fly, both of which must be sought for daily and destroyed, or much damage will be caused.

PLANTS UNDER GLASS

By G. H. MACCOCK, Gardener, Luton Ho, Luton.

The Treatment of Plants after Forcing.—Plants of *Deutzia gracilis* having the shoots that have carried bloom severely pruned back, each shoot being taken separately and cut back more or less according to its strength, the weak shoots being the more severely pruned; weak flowerless spray at the base of the best shoots should be cut off at the ground level. After pruning, stand the plants in a forcing-house, syringing them abundantly every day; and when the weather gets milder turn them out into cold frames to continue their growth, with the help of manure-water occasionally, and a daily syringing.

In June the plants should be ranged to the rims of the pots in beds of tanners' bark or coalashes, and sufficiently wide apart for the sun to shine on all sides of the plants, where the growth will be fully made and matured. If any of the plants need repotting, or the drainage put in good order, a suitable time is when the shoots begin to break after the pruning.

Azalea mollis and *A. rustica* (Ghent).—Both of these species, in their numerous varieties, will produce good heads of bloom, if not quite equal to imported plants, if the plants after being forced are taken proper care of. When the bloom is over, they should be repotted in a mixture of peat and leaf-mould, with plenty of sharp sand mixed with these, and encouraged to make growth by placing them in a warm, moist forcing-house, syringing them well daily. When the growth for the season is finished, they should be removed to a cooler house, and gradually hardened off, finally treating them in the manner of *Deutzias*. Plants so treated may be forced late the next season, if required.

Solomon's Seal and *Dielytra spectabilis*.—When the flowering is over, these plants should have the protection of a cold frame for a few weeks, and then be planted out in well-prepared beds in April, where, if they are left undisturbed for two years, they will force again. By having successions of these plants, good forcing material may be obtained with a small outlay.

Lilac, *Crataegus*, *Rhododendron*.—Any of these which may have been forced into bloom may, after due hardening, be planted out in the shrubbery, &c., in order to recover which they will do in two years, and again become fit for forcing. Such plants, if large, are invaluable if cut; flowers are much in demand. Double-flowered Plums, Cherries, Almonds, the *Staphylea* are amenable to the same sort of culture as that described above.

The Stove.—As soon as it is remarked that roots show through the moss which is tied round the tongued *Dracenas* and *Crotos*—which, in fact, are layers, the tops should be cut off and potted, using quite small pots, and a light sort of soil at this

potting, viz., one that consists of one-half peat and one-half loam, with a small quantity of decayed leaf-mould and sand to make it more porous. The potted plants should go into a gentle bottom-heat for about ten days, being shaded for that space of time from strong sunshine, and the air about them kept moist. A temperature of 70°, with a rise of 5° by night, will suit them.

General Remarks.—Pots of *Lilium longiflorum* and the variety *Harrisii* may receive a top-dressing of leaf-mould and decayed dry cow-dung, and not allowed to lack water at the roots. Plants of *Freesia* and *Juno* should have the flower-stems supported before they fall over the side of the pots. Introduce large or small batches of them into heat according to the demand. The thorough cleansing and the limewashing of all plant-structures should be undertaken without delay, and roof-blinds of every description put into good order, as they will soon be required.

FRUITS UNDER GLASS.

By F. HARRIS, Gardener, Eastnor Castle, Leicestershire.

The Fig.—The fruits on the earliest trees will be in most cases ripening fast, and the syringing of the trees will have been discontinued. In favourable weather the colour of the skin and flavour of the fruits will be much improved by affording the house as much ventilation as the weather will permit. In some gardens the fruits of the Fig exude drops of juice all over, which, if not stopped, causes decay. Others are subject to this exudation, and I find that the best preventative is to increase the heat a little, and keep the atmosphere somewhat dryer. Liquid-manure may be freely afforded during the last swelling, and till ripening has actually commenced, when clear water only should be used.

Succession Figs.—If the growth of shoots is very strong, the points should be stopped at an early date at the fifth or sixth leaf, reckoning from the base, doing this allowing the shoots full time to form fruit for next year. I much prefer to check Fig-trees at the roots rather than to pinch the points of the shoots; and having tried both methods, I find the former the better one. In thinning the shoots, remove first of all the lateral and weak shoots, by which air and light are more freely admitted to the fruit, giving colour and flavour. If the trees in the late Fig-house are not yet started, no time should be lost in doing this, commencing at a temperature of 50° by night, and 56° to 60° by day. Let the borders or tubs, as the case may be, receive a copious application of tepid water at starting, and afterwards as often as may be required; and in warm weather syringe the trees twice daily, and damp the paths, walls, &c., several times a day.

Melons.—Plants which are in flower should have the air about them kept a little dryer than hitherto, and the female flowers pollinated every day at noon, about which time fresh flowers are expanding, and in suitable condition for setting. When half-a-dozen fruits are seen to be swelling, remove flowers as they form, reduce the number of such to four or five, stopping the fruiting-shoots one leaf beyond the fruit, then, if there is space, permit one or two of the laterals to fill up the trellis, avoiding, however, any crowding together of the growths or foliage. All laterals not bearing fruit should be closely stopped at one joint. Afford slight top-dressings of fine loam mixed with bone-meal occasionally, which is better than richer manure either mixed with the soil or applied as a top-dressing. Keep up a succession of plants by sowing a few seeds in a brisk heat once in ten days, growing the seedlings on a shelf in the Pine-stove or other warm house. If kept near the glass, the plants will be short jointed and sturdy.

THE FLOWER GARDEN.

By CHARLES HARRIS, Gardener, Drogheda, Middlesex.

Dahlias.—Roots of *Dahlia* may now be taken from the stove and transferred to a sheltered position outside, and covered with a coating of half-rotten leaves or other light material, and in any case it will be advisable to place these outside or in cold pits or frames before growth commences, as this soon becomes drawn if the roots remain where stored under potting benches. For general use, cuttings taken from old roots answer admirably, and if the latter are of large size, they may be cut up into pieces of two or three shoots each at planting-out

time. If placed outside now, the resulting growth will be short and sturdy, but mats or other covering will have to be used in the event of frosts occurring. Seeds of the single-flowered and Cactus *Dahlia* may be sown at the present time.

Roses.—The pruning of standard and dwarf *Roses* may now be undertaken, with a reasonable chance of the young shoots escaping from injury by frost. Newly planted *Roses* should be pruned back to two or three buds, and the rule—an old one—is applicable for *H. P. Roses*, namely, to prune hard for quality, and the reverse if quantity be wanted. Where not grown for exhibition, many of the strong-growing varieties, grown as dwarfs, may have the best shoots shortened to 2 or 3 feet in length, and then pegged down to the soil, and these will furnish a large number of blossoms. Tea *Roses* should have the weakest growths cut back closely, and the stronger ones shortened, but not to the same extent as the hybrid *perpetuas*.

The Rockery.—Any re-arrangement of plants necessary in the rockery should now be carried out. Where trailing plants are encroaching on their neighbours, a portion should be removed. A slight top-dressing of soil may be afforded where spaces allow, and all dead leaves, &c., may now with safety to the plants be cleared away, and the rockery made tidy. *Iris reticulata* has here flourished well planted between large stones; and *Chionodoxa Lucidic* and other bulbous plants are flowering profusely. The *Chionodoxa* is a plant that seeds freely, and seedlings of various shades of colour are appearing in all directions. *Omphalodes verna* is also in bloom, and many other subjects are coming on rapidly.

The Hardy Perony will require somewhat similar treatment to that detailed above for rock plants. Dead fronds should be cleared away, and a top-dressing of peaty or other light soil placed around the plants.

Various.—The necessary pruning of trees and shrubs should be carried out. This work may often be done when work upon the ground may not be advisable. Laurel hedges require a good deal of cutting to keep them in perfect form, and they are better if cut with a knife, while those made of Holly, Box, and Cypress may be clipped with the shears. On walls and buildings may now have the old leaves cut away either with the hedge-shears or a rapping-hook, and be afterwards brushed over with a besom to remove the dirt and rubbish. Lawns should be swept and well rolled before they are mown, and grass verges cut with the edging-iron after having rolled the turf. Tuberous *Begonias* intended for bedding should be placed in pots of a suitable size, and grown on sturdily to the end of May. The potting of bedding *Pelargoniums* should now be completed, the plants being kept rather close until somewhat established. If desired, the tops of the shoots may be struck, and they root quickly if placed in heat, and not kept very moist. The propagation of *Heliotropes*, *Iresines*, *Mesembryanthemums*, *Coleus*, *Ageratum*, and such like, should be carried on as fast as cuttings can be obtained.

THE KITCHEN GARDEN.

By W. POPE, Gardener, Highclere Castle, Newbury.

Globe Artichokes.—The mulching that was used to protect the roots during winter should be removed without delay. The new growths that are beginning to push should be thinned to three or four of the strongest on each. It is good practice to plant a fresh row or two each year, on rich, deeply-worked soil. Strong suckers with a portion of root attached should be used to make these plantations. Plant them in clumps of three, about a foot distant from each other, and 4 or 5 feet between each clump. Plant firmly, and afterwards give a light mulching of short manure or leaf-mould. A good dressing of rich manure should be applied on the old plantation, and then lightly forked in. Where old plants are scarce, seed may now be sown in heat; and if the seedlings be pricked off or potted as soon as they can be handled, and afterwards, when hardened off, are planted in single rows, they will produce heads during the autumn, and the best may be selected for stock.

Herbs in borders or beds should be carefully looked over and put in order. Old beds of Mint should be cleaned, and then a top-dressing of short, well-rotted manure applied. If fresh beds are to be made, it must be done at once. Lift the roots carefully, and plant them thinly in rows a foot apart in fairly rich soil, mulching them afterwards with short manure or leaf-mould. Thyme is best grown on

rather poor and dry soil, and a fresh supply of plants should be raised each year or two from seed. Sweet and Bush Basil must be sown thinly in pots or boxes under glass, and pricked off when large enough. Grow them for a time under the same conditions, but they may be put outside about the end of May or beginning of June. Seeds of any other annual or perennial herb may now be sown thinly in boxes, or in frames.

Lettuce.—The first sowing of Lettuce may be made now on a sheltered border, and an additional sowing every fortnight or three weeks during the spring and early summer months. One of the most useful varieties for early sowings is Tom Thumb, or Commodore Nutt. If these be thinned slightly in the seed-bed when large enough to handle, and the thinnings planted 3 or 4 inches apart, they will provide a useful succession before other varieties are ready. Plants that have been raised under glass, when thoroughly hardened, should be planted a foot apart each way on a sheltered border, taking care to remove a good ball of soil with each root. If this system be followed successfully, the plants will be fully as early and generally more satisfactory than autumn-sown produce.

Red Cabbage, &c.—If there are plants still in the autumn-sown seed-bed, plant out a few of these at once in rich retentive soil. A pinch of seed may also be sown now, and the plants will provide useful little hearts in the autumn of better quality generally than those from older plants. A little seed should also be sown of Veitch's Self-protecting Autumn and Sutton's Michaelmas White Broccoli, and Chou de Burghly Cabbage.

THE HARDY FRUIT GARDEN.

By H. W. WARD, Rayleigh, Essex.

Transplanting Young Gooseberry and Currant Bushes.—The rooted cuttings of *Gooseberries* and *Currants* of the autumn of 1895, in order to afford more space for branch development, may at this season be dug up and planted at wide distances apart, taking care that their labels do not get detached in doing the work. Before proceeding to plant them, remove any roots which proceed from the stems, preserving only those at the bottom, which should be cut back 1 or 2 inches of the point from which they start. This shortening of the roots will result in the growth of numerous fibrous roots. If the piece of ground to which the plants are going to be removed is in need of enrichment, a good dressing of decayed manure from a spent hot-bed or the rubbish-heap should be dug in. Plant in rows at 15 inches asunder each way, the planting and digging being carried on simultaneously, the workman keeping a good wide trench open all the time. In planting, the workman should take hold of the stem and shake the plant in an upward direction, so that the soil may trickle among the roots, the latter being brought within about 3 inches of the surface after the soil has been broken a little and levelled. Thus treated, and assuming that the buds on the lower half of the cuttings were rubbed off when the cutting was made, nice short-stemmed bushes not liable to throw up suckers will be easily secured. If standards—that is, bushes having clean straight stems of 2 to 4 feet in height—are desired, those of the young plants with the most promising central shoots should be chosen, and the shoot tied to a stick of sufficient strength and length to maintain it, and the subsequent growth of shoots in position till the desired height is reached, when the shoot should be topped. The treatment consisting of cutting out all other shoots, so as to throw the energies of the plant into the lengthened stems, and with that object all buds should be rubbed off for the entire length of the stem, with the exception of four towards the top. These buds, following the beheading of the several shoots, will speedily push into growth, and the young shoots thus made should not be interfered with before pruning-time next spring, when they should be cut back to within three buds of their bases. The unbleached specimens, planted by the side of walks between the ordinary bushes, at 10 to 12 feet apart, have a telling effect, and afford examples of the ornamental and the useful combined. Each standard should be afforded a stake for support. [These standards, being more liable to be acted upon by the wind than the short-stemmed bushes, will in the course of a few seasons require the support of a stout fencing wire boom to which their chief branches may be secured, the hoop or hoops being kept in place by fastening them to three or four neat stakes. Ed.]

EDITORIAL NOTICES.

ADVERTISEMENTS should be sent to the PUBLISHER.

Local News.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturalists.

Illustrations.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, &c., but he cannot be responsible for loss or injury.

Newspapers.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, MAR. 23.—Royal Hort. Soc. Coms.
SATURDAY, MAR. 27.—Royal Botanic Soc. Meet.

SALES.

MONDAY, MAR. 22. Tuberoses, Jannas, Spiras, Green-house Plants, Carnations, Roses, &c., at Protheroe & Morris' Rooms.
Special Sale of Half Perennials (Bulbs, Roses, Lilies, Shrubs, &c., at Stevens' Rooms.

TUESDAY, MAR. 23. Imported and Established Orchids, at Protheroe & Morris' Rooms.
Japanese Lilies, Palms, Seeds, Herbaceous Plants, Azaleas, Begonias, &c., at Protheroe & Morris' Rooms.

WEDNESDAY, MAR. 24. A splendid Collection of about 5000 Roses, Shrubs, Palms, Azaleas, Border Plants, &c., at Stevens' Rooms.

THURSDAY, MAR. 25. Border Plants, Roses, Bulbs, Shrubs, Lilliums, &c., at Stevens' Rooms.

FRIDAY, MAR. 26. Imported and Established Orchids, at Protheroe & Morris' Rooms.

AVERAGE TEMPERATURE for the ENSUING week, deduced from Observations of Forty-three years, at Chiswick.—43° 9'.

ACTUAL TEMPERATURES.—

LONDON.—March 17: Max., 53°; Min., 44°
PROVINCES.—March 17 (6 P.M.): Max., 51°, York, London; Min., 42°, Edinburgh Head.

It is not easy to write when a friend and associate of thirty years' standing is taken from us, but on this occasion we feel that the whole horticultural fraternity shares in our regrets. The author of the encyclopædic "Fruit Manual" has left a claim which posterity will not be slow to recognise. But to us, writing in the present, it is the personal element which is most prominent; and, in our case, that takes date from the ever-memorable year, 1866. In that year was held the greatest and most notable of the International Horticultural Exhibitions and Botanical Congresses; and Dr. Hogg was one of the foremost in the organisation of that great undertaking. But Dr. Hogg's earlier history is very interesting from its associations, on which account we may take the opportunity to reprint, with a few necessary modifications, what we said on a former occasion:—

"To most horticulturalists at all conversant with the doings of the Royal Horticultural Society, the main facts of Dr. Hogg's later career are tolerably well known. As one of the Editors of the "Journal of Horticulture," in conjunction with the late Mr. JOHNSON, the veteran historian of British gardening; and latterly as sole editor; as the author of the standard descriptive work on pomology ("The Fruit Manual") and of numerous other serviceable publications, he became known to a wider circle. From his connection with the Pomological Society, as well as with the Royal Horticultural Society, and specially with its Fruit Committee, Dr. HOGG was brought into contact more or less directly with the great body of British horticulturalists, and

his sterling qualities of head and heart secured for him the cordial esteem and good will of his fellow workers.

He was born in 1818, his father having been the head of the well-known firm of Hogg & Wood, of Coldstream.

At an early age, Dr. HOGG exhibited a taste for the study of natural science, and especially of botany. The love of these studies induced him first of all to direct his attention to the medical profession, but his short experience of the dissecting-room, and the prospective drudgery of the general practitioner, operated as a deterrent to any great progress in that direction; still, those branches of science which were not strictly medical continued to be the subjects which more immediately engrossed his attention, botany being always the means by which he hoped to attain distinction. After pursuing his "humanities" at the University of Edinburgh, Dr. HOGG acquired a knowledge of practical horticulture at the establishment of Messrs. LAWSON, of that city, and subsequently at that of Mr. RONALDS, of Brentford. Here the taste for pomology showed itself, and here, in particular, were the foundations laid of that interest in, and knowledge of, the subject which afterwards proved to be the most important features in Dr. HOGG's public career. The intercourse with RONALDS, at that time engaged in the publication of the magnificent "Pyrus Malus Brentfordensis," gave the impetus to that study which may be said to have become the most absorbing pursuit of his life.

After remaining for some time at Brentford, Dr. HOGG proceeded to France, stopping for a short time at Rouen, where the fruit garden was then under the management of the well-known DUBREUIL, and which still remains a monument of that pomologist's skill and sagacity. From Rouen, the subject of our notice made his way to Paris, where he completed his botanical studies under A. L. DE JUSSEAU, MIRBEL, and other celebrities of the Jardin des Plantes. Remaining in Paris for some time, he afterwards proceeded to Germany, and passed some time at Bonn. On his return to this country, finding that science held out but little encouragement in the shape of substantial reward, Dr. HOGG turned his attention more particularly to the more remunerative field of practical horticulture, on which he brought to bear the knowledge of botany and vegetable physiology which he had acquired during his pupilage. It was about this period that he became associated with the management of what, a century and a half previously, EVELYN had termed "that great undertaking of Brompton Park." This was an immense fruit tree nursery at Brompton, extending from Brompton Church almost to Gloucester Road, Kensington, on the one side, and from Kensington Road to Brompton on the other, thus including the site of the former garden of the Royal Horticultural Society, at what is now called South Kensington.

This nursery was founded in 1681 by LUKAR, FIELD, COOKE, and LONDON; and it may interest many of our readers to know that LUKAR was gardener to the Queen Dowager at Somerset House in the Strand; FIELD acted in the same capacity to the Earl of BEDFORD at Bedford House, also in the Strand; COOKE held a similar situation with the Earl of ESSEX of Cashibury; and LONDON was the fitting servant and friend of Bishop COMPTON at Fulham Palace, while he was also the grandfather of the first Lord SELSEY. The fortunes

of the "great undertaking of Brompton Park," after flourishing for a century and a half, were however, when Dr. HOGG joined the copartnership, in 1845, of Gray, Adams & Hogg, on the wane. Those with whom he was associated were either enfeebled by age or by want of means, or both, and he soon found himself saddled with responsibilities he had no inclination to sustain, and consequently he retired after a few years, and from that time to the present has devoted himself to the literature of horticulture. The advantages of a practical kind which he derived from his connection with "the great undertaking" were, however, of great value. It was during that time that the first form of the "Fruit Manual" appeared. It still remains the text-book of pomologists and nurserymen, and it was not till after its publication that nurserymen adopted the plan of issuing descriptive catalogues of fruits. The "Fruit Manual," the last edition of which was published in 1884, is the best and the most generally known of Dr. HOGG's separate publications; but it was not the first in order of time of his literary productions, for while still a youth he published in Edinburgh a "Treatise on Annuals," with descriptions of those cultivated at that time, and he subsequently issued a "Treatise on the Dahlia, its History and Cultivation," and retained to the last a liking for florists' flowers, especially Tulips.

About 1844 Dr. HOGG commenced a work entitled "British Pomology," but the only portion ever published was the first volume, treating on the Apple. At the time this was published the present rage for the study and cultivation of fruits did not exist. No bookseller would take the responsibility of its publication, and he had to undertake it himself. As a remunerative speculation it was a failure, and, like LINDLEY's "Guide to the Orchard and Kitchen Garden," published twenty years previously, it was still in advance of the time. Now, we believe, the work is entirely out of print. Not discouraged by the failure of this attempt to excite public interest in pomology, Dr. HOGG adopted other means of keeping the subject before the public mind. Early in 1853 we find him writing as follows:—

There is, perhaps, no country in the world where the study is more neglected than in our own. In America, they have in various States pomological 'societies' and 'institutes,' which meet as regularly as our Royal and Linnean Societies, and discuss pomological subjects. Several excellent works have issued from the press of that country, and are justly popular, and it is to America that we are indebted for some of our finest varieties of fruits. In Germany, too, it is a very popular study, of which the numerous pomological societies and publications furnish ample evidence. In France it has a great measure of support, although perhaps not so great as in those countries already mentioned, but certainly far greater than in our own; and in Belgium it is found not unworthy of Government patronage and support. Need it be wondered, then, that so little is known when so little interest is manifested on the subject in this country? We trust the time is coming when the same vitality and energy will be exhibited as there was at the time when Mr. KNIGHT and Mr. SABINE devoted so much of their attention to it.

And the time speedily came, for in little more than twelve months after this was written, the British Pomological Society was instituted (in 1854), with Sir JOSEPH PAXTON as president, and Dr. HOGG and Mr. SPENCER as joint secretaries, the initiative having been taken by Mr. SPENCER of Bowood, Mr. RIVERS of Sawbridgeworth, and Dr. HOGG. After several years of useful-



THE LATE ROBERT HOGG, LL.D.

(See page 188.)

ness, and after passing through the vicissitudes which appear to be normal phenomena in the career of societies as well as in that of most individuals, the British Pomological Society was merged in the Fruit Committee of the Horticultural Society, the first meeting of which body was held at the rooms of the Horticultural Society at 21, Regent Street, on July 5, 1858. Subsequently, Dr. HOGG was secretary to the Fruit Committee, and afterwards he took an active part in the practical business of the Royal Horticultural Society, acting as one of the directors (in conjunction with Rev. Mr. BERKELEY and Mr. MOORE) of the Society's garden at Chiswick. In this latter capacity it fell to Dr. HOGG's lot to superintend the replanting of the fruit garden, and to select the varieties to be retained in the diminished space then available for the purpose.

Dr. HOGG's name must also be honourably associated with those who by their zeal and energy promoted the success of the London International Horticultural Exhibition and Botanical Congress of 1866. The management of the great banquet at the Guildhall, which has had few if any rivals since, falling to his share; while to the last he remained one of the trustees of the Lindley Library itself, a tangible memorial of the Botanical Congress. It was, therefore, a happy coincidence that Dr. HOGG should have been one of those who represented this country at the International Horticultural Exhibition at St. Petersburg, on which occasion he became the recipient of a handsome slab of malachite as a mark of the Emperor's recognition of British Horticulture and of courtesy towards its representatives. Dr. HOGG and the present writer represented this country at the Florence Congress in 1874.

Laterly it became obvious that the labourer's work was done. He resigned the editorship of the *Journal* to his son, his attendances at the Royal Horticultural Society's meetings became less regular, and on the 14th inst. the end came quietly and peacefully.

ROYAL HORTICULTURAL SOCIETY.—The next Fruit and Floral Meeting of the Royal Horticultural Society will be held on Tuesday, March 23, in the Drill Hall, James Street, Victoria Street, Westminster, 1 to 5 P.M. A lecture on "Bad Transference and its Effects on Fruit" will be given at 3 o'clock by the Rev. GORDON SALMON, M.A.

ROBBERY AT THE OFFICES OF THE ROYAL HORTICULTURAL SOCIETY.—An inpatient robbery was perpetrated at the Royal Horticultural Society on Thursday, March 11. The precincts of the Royal Horticultural Society's Council Room were invaded by a thief, who quietly and expeditiously appropriated the overcoat of the Assistant-Secretary, Mr. J. WEATHERS. The latter was on the other side of the dividing-curtain, but heard nothing. The thief was considerate enough to leave behind a bundle of papers which he took from one of the pockets. In view of the possibility of a thief making off with some of the most valuable books from the Lindley Library, which finds a home in the Council Room, and the loss of which, unlike that of Mr. WEATHERS' coat, might be simply irreparable, some means ought forthwith to be found to render the access of a thief to this room much more difficult of accomplishment than it is.

ROSE SHOW FIXTURES FOR 1897.—The following dates of rose shows are kindly furnished by Mr. E. MAXLEY, viz., June 17, Thursday, Colchester and Ryde; June 23, Wednesday, Portsmouth (N.R.S.); June 26, Saturday, Windsor; June 29, Tuesday, Canterbury, Sutton, and Westminster (R.H.S.); June 30, Wednesday, Croydon; July 2, Friday, Crystal Palace (N.R.S.); July 7, Wednesday, Glasgow and Reigate;

July 8, Thursday, Bath, Gloucester, and Woodbridge; July 15, Thursday, Norwich (N.R.S.), and Helensburgh July 22, Thursday, Halifax and Trentham July 27, Tuesday, Tibshelf. Our correspondent states that these are the only dates definitely fixed that have as yet reached him, but others will reach him about the middle of the month of April, which will be published in due course in these columns.

HORTICULTURAL CLUB.—The usual monthly dinner and *conversazione* took place at the rooms of the Club, Hotel Windsor, Victoria Street, Westminster, S.W., on Tuesday evening March 9. The ordinary was to have been taken by Sir J. D. T. LLEWELLYN, Bart., but business at the House of Commons prevented him from attending. Mr. SALMON, Clerk of the Gardeners' Company, was requested to take his place, and in a few appropriate words he thanked the members for the honour they had done him, the youngest member of the Club, in placing him in so honourable a position. There were also present Messrs. Geo. Paul, F. Rochford, James Walker, J. Asbee, T. Francis Rivers, F. Rivers, jun., C. E. Reassou, G. Bonyard, James H. Veitch, and the Secretary. A paper was read by Mr. T. Francis Rivers, entitled "Notes on Fruit," which displayed an intimate knowledge of the whole subject, especially the raising of new varieties of fruit. This paper we hope to give in a future issue. It was followed by a very interesting discussion, in which most of the members present took part. Mr. G. Mount, of Canterbury, contributed to the decoration of the table with some of the magnificent Roses which he exhibited at the Drill Hall, and which won such general admiration, and for which a vote of thanks was recorded to him by the committee.

BOTANIC GARDEN, ST. PETERSBURG.—Dr. FISCHER von WALDEIM has been appointed successor to the late Professor BATALIN in the Directorate of the Imperial Botanic Garden.

GEORGES VILLE, the eminent chemist, attached to the Museum d'Histoire Naturelle, died on the 22nd ult. in his 74th year.

HUNTS COUNTY COUNCIL.—Mr. D. T. FISH has just completed a course of lectures on "Cottage and Allotment Gardening" in various districts of Huntingdonshire. The subjects of the lectures were as follows:—First lecture, "How to make Dead Soils Live and Grow Good Crops. The Draining, Trenching, Digging, Enriching, and Cleansing of the Earth." Second lecture, "Potatoes for the Home, the Market, the Million; Onions and other Root-crops." Third lecture, "Apples, Bush-fruits, and Strawberries, &c."

THE EXECUTIVE COMMITTEE OF THE INTERNATIONAL HORTICULTURAL EXHIBITION OF 1866.—The death of Dr. HOGG, on the 14th inst., lessens by one the surviving members of the Executive Committee of the International Horticultural Exhibition and Botanical Congress of 1866—perhaps the chief horticultural event in Her Majesty's long reign. Looking at Heath's photograph of the Executive Committee taken in 1866, we note that the survivors now form a comparatively small minority. They are Sir Daniel Cooper, Bart., Treasurer; Messrs. W. Bull, Edward Easton, John Lee, W. Paul, H. J. Veitch, Dr. Masters, Congress Secretary, and Richard Dean, the Assistant-Secretary. The Executive Committee originally consisted of twenty-one persons, including Mr. Dean, twenty-two. Dr. Berthold Seemann, the original Congress Secretary, went abroad, resigning the secretaryship, and was succeeded by Dr. M. T. Masters, but his name was retained on the committee. The Deputy-Chairman, Mr. J. J. Blaudy, never, it is believed, saw the exhibition, and he died before the report was issued. Those who went down to The Star and Garter Hotel at Richmond to dine at the conclusion of the labours of the committee were twenty-one in number, including Mr. Charles Lee, who rendered valuable services in laying-out the exhibition ground in conjunction with Mr. John Gibson, Mr. George Eyles, and Mr. Harry J. Veitch. The absentees were Mr. J. J. Blaudy, Mr. J. Fleming, and Dr. See

mann. To the best of our knowledge, Mr. Edw ard Easton, the civil engineer, still survives. Of the 110 jurors who made the awards on that occasion, probably not more than twenty survive. Of the speakers at the banquet at the Guildhall of the city of London, which was presided over by the father of the present Lord Mayor, only Sir Daniel Cooper remains; and of the six members of the Common Council of the City, who had so much to do with the arrangement of the banquet, not one survives.

THE SURVEYORS' INSTITUTION.—The next ordinary general meeting will be held on Monday, March 22, when a paper will be read by Mr. C. H. HOOPER (Fellow), entitled "Fruit-growing as an Auxiliary to Agriculture." The chair to be taken at 8 o'clock.

SOCIETY OF JERSEY GARDENERS.—A monthly meeting was held in the Lyric Hall, Jersey, on Thursday evening, March 11, there being a large attendance of members present. Mr. H. J. SKINGLEY, gardener to CHAS. GODFREY, Esq., read a paper upon "Ferns," in which he offered valuable remarks upon the propagation and treatment of Ferns in general. Mr. P. BOIS made a few remarks on variation in Ferns, and a good discussion followed. Various Certificates and other awards were made to interesting exhibits.

CAPE FRUIT.—The ss. *Tantallon Castle* has arrived from the Cape with 728 cases of fruit, consigned as follows:—202 cases of Grapes, to Mr. HUDSON; 195 cases do., to the Colonial Consignments and Distributing Company (Ltd.); 5 cases to W. R. SUTTON & Co.; 86 do., and 20 cases of Pears, to Messrs. WOODHEAD, PLANT & Co.; 120 cases of Grapes to Mr. E. HUDSON; and 100 cases do., to Mr. NATHAN. This entire consignment arrived in very good condition.

RENFREWSHIRE GARDENERS' SOCIETY.—The concluding fortnightly meeting for this session was held on the 10th inst. Mr. MORTON ROSSHALL read an excellent paper on the "Rock Garden," in which he described the principal effects to be secured in the formation of such a garden, and a list of plants most suitable for planting was included. Mr. MAXWELL RALSTON afterwards gave a paper on "The Rose: its history and culture." The part of this paper dealing with the history of the Rose was much appreciated, and the cultural details in connection with both papers were discussed by the members present.

READING GARDENERS' MUTUAL IMPROVEMENT ASSOCIATION.—An interesting paper upon "Table Decorations" was read by Mr. POWELL, of Park Place Gardens, Houlvey-on-Thames, before the members of this body on Monday evening, March 15, in the Club Room, British Workman. Mr. C. B. STEVENS, the President, presided over a large gathering of members. A very interesting discussion took place, in which Messrs. NEVE, TURTON, STANTON, MARTIN, WOLFORD LEES, DEARLOVE, TUNBRIDGE, CHAMBERLAIN and FRY took part.

CARDIFF GARDENERS' ASSOCIATION.—The usual fortnightly meeting was held in the Reference Room of the Cardiff Free Library, on the 9th inst. The Society met by the invitation of Mr. BALLANOE, the librarian, to examine the collection of books on gardening and allied subjects contained in the reference library. In giving his welcome to the association, Mr. BALLANOE intimated his willingness to aid any work on horticulture which the Society might propose as desirable to make the collection a more complete one. A short address was given on gardening literature by the vice-president, after which the books were examined by the members.

A FLOWER SHOW IN INDIA.—The annual Flower Show of the Agri-Horticultural Society of India was held in the society's garden at Alipore, a suburb of Calcutta, on Feb. 19 and 20. Considering the deficient rainfall, there was a much better display of fruit and vegetables than had been anticipated. It proved that the soil of the plains of India is capable of producing much more than is generally believed, even in

a bad season, providing water can be obtained, and good cultivation is given. The plant classes were contested by some of the leading Calcutta nurserymen, and the groups staged for effect were very good. The feature of the show was the flowering annuals, which made a very fine display, the best being *Asters*, *Petunias*, *Verbeas*, and *Phlox Drummondii*. Some fine plants of *Cilanthus Dampieri* were shown, in 10 and 12 inch pots. They appeared to be potted very lightly, in a compost of leaf mould, cow-manure, and a little loam. Honorary exhibitors were sent from the Royal Botanic Gardens, Seebore, from Baboo Laxa Dhilli Chund; and from the Maharajah's garden, Durbungah, the two first exhibits contained some rare and valuable plants, and the Durbungah exhibit was an excellent miscellaneous collection of fruits, flowers, and vegetables.

NEWCASTLE AND DISTRICT HORTICULTURAL IMPROVEMENT SOCIETY.—The monthly meeting was held on Tuesday, March 9, when Mr. JOHN BULLOCK presided over a good attendance of members. Among the flowers exhibited were *Orchids* and *Hyacinths* by Mr. LAWSON, gardener at Heathdale, Gosforth; and a collection of *Dendrobiums* by Mr. MURRAY, the gardener at Oakwood. Mr. W. H. LEONARD read a paper on the "Chemical Composition of Roots, Vegetables, Seeds and Fruits." The paper included tables showing the constituents of each of the different parts of plants. A lively discussion was afterwards engaged in.

PRESENTATION.—On the occasion of his leaving the gardens of Lord FALMOUTH, at Moreworth Castle, after thirteen years' service, Mr. H. MARKHAM was the recipient of a beautiful inkstand, with suitable inscription engraved thereon, presented by the young men employed in the garden, and a silver-mounted biscuit-box from his lordship's servants. Mr. MARKHAM had to leave Moreworth owing to the continued ill-health of himself, his wife, and family, induced by the damp, relaxing air of the place. We hope that he will soon meet with an appointment commensurate with his abilities as a gardener.

SHIRLEY AND SURROUNDING DISTRICT GARDENERS' AND AMATEURS' MUTUAL IMPROVEMENT ASSOCIATION.—The annual general meeting was held at the Parish Room, Shirley, Southampton, on the 15th inst., there being a good attendance, the chair being occupied by the Vice-President, W. F. MAYOBS, Esq. The report showed the Society to have had 140 members, to have held thirteen meetings during the year, at which the average attendance was forty-two. The statement of accounts showed a small balance in favour of the association. The President, W. F. G. SPANGLER, Esq., C.C., and the Hon. Sec., H. J. HOSBY, were re-elected, and also an enlarged committee of fifteen, instead of nine, as formerly. Mr. A. DEAN, Lecturer in Horticulture to the Surrey County Council, gave a brief but interesting address on "Horticultural Progress during the Victorian Era."

DEVON AND EXETER GARDENERS' ASSOCIATION. CINERARIAS AND PRIMULAS.—At the fortnightly meeting on March 3, Mr. J. WEEKS, gardener to Mr. E. A. SANDERS, Stoke House, Exeter, read an instructive and carefully prepared paper on *Cinerarias* and *Primulas*. Mr. H. WEBBER occupied the chair. The papers dealt pretty fully with the history of the plants, and the cultural details furnished were very good. In the case of the *Cinerarias*, both single-flowered and double-flowered varieties were dealt with; the same also as regarded the *Primula*, although in the case of this plant hardy species were reviewed, and their culture touched upon.

M. G. BONNIER has been elected a member of the Botanical section of the Académie des Sciences (Institut de France).

STOCK-TAKING: FEBRUARY.—As was to be expected, the very unsteady political outlook has been one means of raising the imports of the past month from £35,476,736 in February, 1896, to

£37,245,161 for the month just ended—an increase amounting to £1,768,425. From the "summary" table of the Returns for February we take the following figures:—

IMPORTS.	1896.	1897.	Difference.
Total value ...	£ 35,476,736	£ 37,245,164	+ 1,768,428
(A.) Articles of food and drink, duty free—			
Articles	11,400,923	11,860,734	+ 459,811
Free	1,749,032	2,127,645	+ 378,613
Raw materials for textile manufactures	7,317,791	8,091,585	+ 773,794
Raw materials for sundry industries and manufactures	2,746,438	2,795,651	+ 49,223
(A.) Miscellaneous articles	1,125,915	1,130,623	+ 4,708
(B.) Parcel Post	13,433	98,543	+ 4,810

We may note here that the increase on the two months, as compared with January and February of last year, amounts to £3,270,240. As for food imports in the month just closed, Wheat shows an increase of 1,393,980 cwt.; in Wheat-meal and flour, 123,360 cwt.; Barley has decreased by 329,190 cwt.; Oats have gone down by 190,630 cwt.; Indian corn, however, has gone up 410,080 cwt.; Indian corn-meal having an increase of 36,600 cwt.; Tea shows the large increase of 3,098,212 pounds; unmanufactured tobacco has gone up by 1,529,709 lb.; while manufactured shows a falling off to the amount of 75,688 lb. Sugar shows a falling off in both refined and candied, to the extent of 337,875 cwt.; unrefined having gone down by 1,070,842 cwt.—all as compared with February, 1896. There is a great increase in the supply of raw materials for textile manufactures, the whole increase being £773,794. The figures relating to the imports of fruit, &c., are given in the subjoined table:—

IMPORTS.	1896.	1897.	Difference.
Fruits, raw:—			
Apples ... bushel.	303,864	623,265	+ 319,401
Cherries ... ..	...	...	...
Plums	719	369	-359
Pears	1,399	3,117	+1,718
Grapes	1,146	1,405	-41
Unenumerated	39,975	39,397	-578
Onions	481,936	552,119	+70,183
Potatoes	39,980	40,790	+810
Vegetables, raw, unenumerated value	£12,713	£68,514	+4,801

From the Cape, with other products, have come splendid-looking samples of Oranges—beautiful without, but (judging from those purchased by the writer at 4d. a piece), very deceitful as to flesh and flavour. To come to—

EXPORTS.

but little surprise need be felt at the falling off shown in the total—£1,839,413. Considering the state of things in the near East, and in India—famine and disease, but little wonder need be expressed. The loss for the two months of the year now belonging to the past is placed in the Board of Trade Returns at £3,199,663; but it is satisfactory to note that matters in the United States look promising, and point to a further and not far distant revival of trade in several branches—a consummation devoutly to be wished.

ISLE OF WIGHT HORTICULTURAL IMPROVEMENT ASSOCIATION.—The monthly meeting of this Association was held at Warburton's Hotel, Newport, on Saturday, March 6, when there was a good gathering of members, who were present to hear a paper read on Winter Vegetables, by Mr. W. TAMBICK, F.R.H.S., gardener to Sir CHARLES SERLEY, Bart., Brooks House. Dr. J. GROVES, B.A., J.P., chairman of the Association, presided, and made a few appropriate remarks expressing regret that the essayist, through ill-health, was not able to read his paper. A dish of

excellent tubers of *Stachys tuberosa* was shown by Mr. W. E. WICKES, gardener to R. R. PITTS, Esq., J.P., C.C., Lugby House, Newport. Mr. J. J. LINGSTON obtained a Certificate for a collection of *Cyclamen Charming Bride*, two-year old corns. Several new members were elected.

AN INSTITUTE FOR THE TEACHING OF BOTANY.—Mr. MARTINDALE is advocating the establishment, in the Royal Botanic Garden, Regent's Park, of an institute for botanical teaching in London. Since botany ceased to be a necessary subject in the curriculum in the medical schools, there has been a deficiency in our teaching establishments, those few that do exist turning their attention almost exclusively to biological and physiological botany. Years ago we used to lament the too exclusive attention paid to morphology and the systematic botany of flowering plants; but now all that is changed, the pendulum has swung in the opposite direction, and the highly trained microscopists often come up for examination very poorly equipped with a knowledge of plants and their natural orders. This is a distinct misfortune to medical men, travellers, horticulturists, and others connected with economic botany. If the Royal Botanic can justify its title by the establishment of a school for educational purposes, and for research, we shall be disposed to look more leniently on its extraneous frivolities.

ANTHURIUM SCHERZERIANUM.—A First class Certificate has been awarded by the Société Nationale d'Horticulture d'France to a variety called *Le Géant*, and a First-class Award for a group of seedlings, all raised by M. A. de la DEYANSAYE of Aogers. These are all variations from one species.

KEW.—His Majesty the King of the BELGIANS paid a visit to the Royal Gardens during the past week.

TULIP FROM CHITRAL.—We understand that the Tulip which we recently figured (January 30) was collected at Chitral by Surgeon-Lieutenant A. F. STEVENS, I.M.S., and was presented by him to the Agricultural and Horticultural Society of India.

LAPAGERIA ROSEA IN THE OPEN AIR.—A Devonshire correspondent, writing in reference to the paragraph on this subject which appeared in our last issue, p. 174, says that Mr. ROBIN'S garden lies in a cool south of the Maldon Hills, and quite two miles from the sea. The plants are growing on a western aspect. Both L. r., and its variety *alba*, are not uncommon in Devonshire and Cornwall, flowering with merely slight protection against severe weather.

MINIATURE CHRYSANTHEMUMS.—M. ANATOLE CORDONNET contributes to the *Revue Horticole* for March 1 the following letter on these dwarf plants:—"The miniature Chrysanthemums which I showed last year in Paris at the Exhibition of the French National Horticultural Society were growing in pots from 2 to 3 inches in size at most, and bore each a single flower from 5 to 6 inches across. They were raised in the following way:—About August 15, cuttings with a crown-bud "taken" a few days previously from plants in pots or in the open air were placed in pots of 3 cent. (about 1 in.) across. The pots were filled with compost mixed with "Papillon" manure during the winter, to which a large proportion (about a third) of sand was added. These pots were sunk in an old hot-bed, and kept shaded for three weeks under a clove lid glass. At the end of the time the little plants showed roots; they were then re-potted into 2 to 3-inch pots, and 14 the plants kept in a cool-house, where they flowered naturally. These little plants in small ornamental pots, and mixed with *Ferus*, make a charming and lasting decoration, requiring no other care than occasional watering."

PUBLICATIONS RECEIVED.—*Country Life* (20, Tavistock Street), a weekly journal, profusely illustrated, and interesting to all fond of rural work, sports, or recreation.—*The Navy and Army* (HUDSON G. KEARNS, London, S.E., and GEORGE NEWNS, 10, Southampton Street), a fortnightly publication, edited

by Commander CHAS. N. ROBINSON, R.N. The letter-press deals with such subjects as the title of the newspaper suggests, and the illustrations are good and numerous.—*Nature Notes* (London): JOHN BALL & SONS, edited by JAMES BRITTON, F.L.S., continues its valuable work in connection with the Selborne Society.—*The European Mail* (Imperial Buildings, Ludgate Circus, E.C.). A useful paper to send to absent friends.—*Bulletino della R. Società Toscana di Orticultura*, Febraio.—*Pharmaceutical Journal*, March 6.—*Favourite Flowers of Garden and Greenhouse*, vol. iii, No. 29.—*The Summary of a Meteorological Journal* kept by C. L. PRINCE, at his Observatory, Crowborough Hill, Sussex.—*Schedules of Prizes, National Rose Society*, for Exhibitions at Portsmouth, June 23; at the Crystal Palace, Sydenham, July 2, and at Carrow Priory, Norwich, July 15.—*The Botanical Gazette* (Chicago), February.—*Garden and Forest* (New York), February 24 and March 3.—*The Florists' Exchange* (New York), February 27.—*The National Nurseryman* (Rochester, N. Y.), March.—*The American Florist* (Chicago and New York), February 27.—*Mechanics' Monthly*, March.—*The Canadian Horticulturist*, published by the Ontario Fruit Growers' Association, February.—*Catalogue of Duplicate Specimens in the Billmore Herbarium* (N. Carolina, U.S.A.).—*The Botanical Magazine* (Tokyo), January 20.—*Müller's Deutsche Gärtnerei-Zeitung*, March 10.—*Botanische Jahrbücher für Systematik, Pflanzengeschichte und Pflanzengeographie*, von A. Engler (Leipzig), February 23.—*Illustrirte Flora* (Wien), March 1.—*Botanisches Centralblatt*, Band lxi., No. 10.—*Gartenflora* (Berlin), March 1.—*Wiener Illustrirte Garten-Zeitung*, February.—*Le Jardin*, March 5.—*Annales Agronomiques*, February 25.—*L'Amphitropus*, un nouveau genre de Myxomycètes, par E. ROZE (Extrait du Journal de Botanique, December 16, 1896).—*Nouvelles Observations sur les Bactériocides de la Pomme de Terre*, par M. E. ROZE, and *La Maladie de la Gale de la Pomme de Terre*, par M. E. ROZE (Extraits du Bulletin de la Société Mycologique de France).—*Revue Diplomatique et Coloniale*, 1re Année, No. 1, March 1 (Paris).—*Association Française pour l'Avancement des Sciences* (Paris), M. E. ROZE, sur deux plantes tunisiennes du XVI. Siècle.—*Le Chrysanthème*, Journal de la Société Française des Chrysanthémistes (Lyon), March 5.—*The Dahlia*, by various writers (MACMILLAN & Co.).—W. WESLEY, *Catalogue of Botanical Books*, 28, Essex Street, Strand; 3000 numbers, comprehensive, accurate, and well arranged.—*Moniteur Horticole Belge*.—*Nord Horticole*.—*Ferns and Fern Culture* (J. BIRKENHEAD, Sale).

the perianth segments are cut to the base; in structure it comes near to *Scilla bifolia*. *Geo. Nicholson, Royal Gardens, Kew.*

species is worthy of cultivation. The lorato foliage is stiff and notched at the apex; the flower racemes are erect, and carry a number of pale yellow flowers, the great attraction being the purple-coloured crest of the lip which gives them a distinct character. The species is plentifully distributed in India and Ceylon, and it is usually grown in this country under the name of *Abrides Wightianum*. The plant is figured in the *Botanical Magazine*, t. 5193.

Saccolabium bellinum.—Plants of this free flowering species are to be seen in the Orchid-house. It is a small plant of compact habit, with small leaves, 6 inches or more in length, and carrying short peduncles furnished with a few of the pretty blooms, the petals and sepals of which are of a pale yellow colour with deep brown blotches, which almost cover the ground colour. The labellum is white with a hairy look, and has a blotch of yellow in the centre. This is an early flowerer, introduced through Messrs. Low & Co., from Burnah, in 1834. *R. L. II.*

HOME CORRESPONDENCE.

ENDIVE.—That Endive is an old inhabitant of our gardens there can be no doubt. A native of the East Indies, it has found its way into many countries, and in France it is largely grown and eaten, boiled, and in various ways as salading. In this country, as Mr. Henri de Vilmorin has pointed out, we make no such good use of Endive as a boiled vegetable, as the French do. The precise time when it was introduced to this country is not exactly known. Suffice it to say, that it formed one of the items of a bill-of-fare in the reign of Queen Elizabeth; and Gerard's instructions as to its management does not materially differ from the practice of modern cultivators of the plant. Its ancient popularity was doubtless enhanced by its being esteemed one of the best antidotes to scurvy. This at the time the plant was introduced to this country was, no doubt, a more formidable disease than now, and from coming into use in winter, when salt meat formed a much greater proportion of the general food than it does at present, Endive, no doubt, as well as other plants of its class, speedily became a favourite; at all events, we may reasonably infer that its property of checking a disease so much dreaded at the time led to the plant being welcomed to the gardens of all types are cultivated in gardens in this country, distinct enough in appearance to be regarded as species, but yet doubtless derived from a common origin—one is the curled form, the other the broad, flat-leaved, known as the Batavian; and there are various forms of both, but more of the curled than the broad-leaved is probably the normal form. The curled varieties are selections from it, and in taking on their curled and handsome out-leaved character, they have, it is likely, lost some of their original hardiness of character. Thus it is that the curled varieties form the autumn and early winter, and the varieties of the Batavian type for general autumn and early winter work. A fact supporting the view of a common origin is, that the seeds are alike in all respects. Except in market gardens and those of the wealthy, Endive is rarely found; it has never held the popular taste as the Lettuce has. Endive can be found but in very few allotments and cottage gardens, though a good deal of attention is given to summer salading; yet a dish of well-blanchend Endive, set round with slices of highly-coloured Beet, is an ornament to the table, to say the least of it. Some of the French selections of the green curled are extremely handsome; the leaves, in some cases delicately and exquisitely cut, and lines of some of these alternating with those of the green and white Batavian types, would prove attractive, and furnish borders usually empty in winter. *R. D.* [For how long? Ed.]

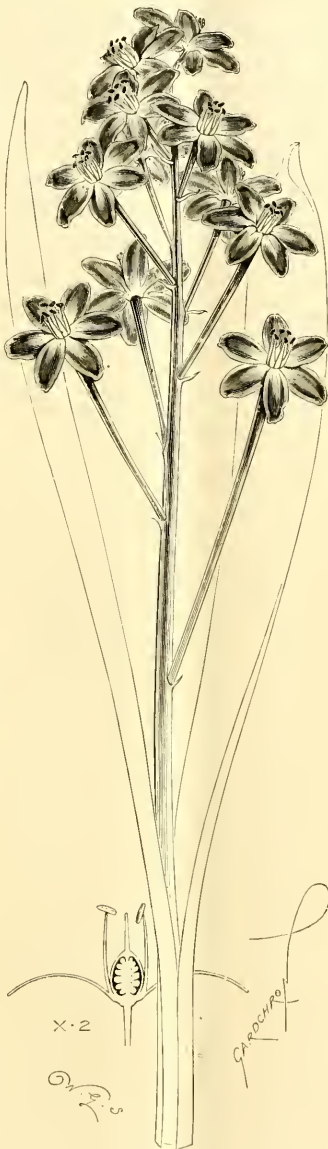


FIG. 57.—CHIONOSCILLA ALLENI.

CHIONOSCILLA ALLENI.

The first mention of this name I can find is in a letter from Mr. James Allen, Park House, Shepton Mallet, to Mr. J. G. Baker. The latter gentleman has kindly allowed me to copy the following extracts:—"I think I mentioned to you a year or two since that I have found a good many natural hybrids of *Scilla bifolia* and *Chionodoxa Lucilie* come up in my garden. Both of these species seed very freely with me, and are getting quite a nuisance, as they crowd everything out. These hybrids I have named *Chionoscilla*, and when they get into strong plants, I think the best of them will be great favourites. . . . I send you flowers of some of these, and I think you will at once see that they are intermediate in their character. These seedlings bear seed freely, and the seedlings of the second generation are apt to revert to one or other of the original parents." The letter from which I have quoted, is dated March 2, 1893; a previous one, dated April 3, 1889, gives particulars of these accidental crosses. There are dried specimens in the Kew Herbarium from Mr. Allen, and also from Rev. Wolley Dod. The specimen here figured flowered in the Rockery at Kew, amongst a lot of *Chionodoxa* received from Mr. Whittall, Smyrna; and in all probability we received the bulb from him. A glance at the illustration (fig. 57) will show what a handsome garden plant it is. The colour and general aspect are that of a good *Chionodoxa Lucilie*, but

SCOTLAND.

NOTES FROM EDINBURGH ROYAL BOTANICAL GARDEN.

Vanda parviflora.—Although it can hardly be called a showy Orchid, yet, on account of its remarkable colouring, and the time at which it flowers, this

THE CARDOON AS A DECORATIVE PLANT.—Several kinds of vegetable are utilised for decoration, whether in beds during the summer, in vases or baskets; such are red foliaged Beetroots, curled Kale, &c. The flavour of the Cardoon does not please everybody, and in this case it would be preferable to grow the plant as a garden ornament. I have seen this done, and the effect was excellent, indeed as good as that obtained from *Ferriandea cinnamens*, *Aralia papyrifera*, *Wigandia caracasana*, or other foliage plants employed in the

garden. Cardoons planted singly on the grass or in groups, especially the variety with prickly foliage (also the best for culinary purposes) have a picturesque effect. Seeds of the de Tours variety should be sown in a hotbed-frame in February or March, and the seeds should be new in order that the seedlings may be vigorous, and not inclined to throw flowers. The seeds may be sown on the soil in the frame or three in a thumb-pot; the latter method being preferred, cardoons not liking to be "tricked out" owing to their possessing a tap-root. When the three young plants are well developed the strongest should be chosen, and the others destroyed. Until the middle of May they should be carefully repotted, and special attention paid to affording water in order to prevent any check to growth. A large hole is made and filled with well-manured soil, and as soon as the weather permits it the plants are transplanted to the spot. A mulch of farmyard-manure should be placed around each plant, and copious waterings afforded to aid development, remembering that the more abundant the water the less likelihood that they will flower and thus spoil their decorative aspect. Well protected against frost with straw coverings, or removed bodily to a cellar, such plants are quite tender and fit for cooking. *Louis Gentil, Ken.*

FARFUGIUM GRANDE.—In a cottage window in Hyde I noticed a grand specimen of the old neglected Farfugium grande, a good old plant for decorative purposes. In the same window a plant of *Primula obconica* seemed to be quite at home, the same was caged up with sticks and strung; this attracted my attention, and I was bold enough to make inquiries. This was the information gained that the lady who evidently looked after the window decoration, "Law bless me, sir, it is a beautiful plant, but don't you know, sir, it is an awful poisonous plant; my sons say it gives you a rash if you are not careful, so I protect my children from it in the way you see." *Rusticus.*

A SIMPLE FUNERAL-WREATH.—I wanted a wreath to place on a lamented friend's grave, and I desired it made of his favourite flowers, combined with some leaves; which, it seemed to me, would, together, convey to those who knew him and me, and were aware of our long-time friendship, something like the thoughts I wished to express. I wrote to my friend, Mr. W. Spinks (Messrs. Hewitt & Co.'s Nursery, Solihull), stating what I desired. This is what I received: a wreath of very moderate size, composed of bunches of home-grown Lilies of the Valley, and deliciously-perfumed purple Violets in alternation; the leaves of the Lilies and (here and there) small sprays of Bay-leaves being the only greenery used. The bunches of flowers were tied very loosely, so as to avoid any appearance of formality; and the result was so charmingly effective, that I venture to pen these lines in the hope that they may not be without their use. The flowers chosen were, as indicated above, my departed friend's special favourites; and the combination was intended to convey in the language of flowers suggestions of (symbolically) the sweetness of disposition and vernal character of the departed one, and my own affectionate regard for him; while, by the bay leaves, I sought to typify my friend's chief characteristic—the conscientious doing of everything he undertook throughout the thirty years I lived in daily intercourse with him, and the victory he won in the battle of life. *Edward W. Badger, Birmingham.*

PLANTING POTATOS.—In many gardens it is a common practice to plant Potatos at a given date regardless of the situation or nature of the soil. In low-lying places, or on stiff soil, it is prudent to plant late, late frosts being more injurious in such than on higher ground. With properly prepared sets the shoots soon show through the soil, and if very early planted on stiff land, the latter becomes hard before the shoots find their way through it, the consequence being spidly growth. Better by far allow the sets to remain unplanted till the middle or end of the month of April, when the elements will have reduced the crust to a good tilth. The depth at which the sets should be placed depends on the variety, and the space required by the tops. When Potatos are grown as a field-crop, 27 inches is the usual distance for all varieties between the rows, though some would give better crops if more space was allowed. With close rows, there is less soil available for earthing-up, and many tubers get exposed, whereas, when the rows are wider apart, there is more soil. In gardens the rows should be wider than 27 inches, and

the sets in the rows more apart. The smaller distance suits Ashleaf, Walnut-leaf, and other small-haunched varieties; but mid and late-season varieties should have much more. On stiff land, shallow planting is best. Blanks are frequently seen in Potato-fields owing to the sets failing to grow, and sometimes the haulm is very weak. This misfortune is due largely to lack of care in selecting the sets, or from planting sets that are quite dormant; but if planting be done in the middle of April, unsuitable sets would be detected, and cast on one side. Potato sets that are allowed to sprout to a great length in the clamps, and the longer sprouts are removed at planting time cannot make a second strong growth, hence a comparative failure of the crop in some instances. The gardener with his small area to plant, should be enabled to have well-prepared sets of all the varieties he grows, and failure, except from the ravages of disease, should be unknown to him. Some gardeners later crop, but it is not a practice to be encouraged, it being better to have one good crop than two poor ones, but want of space compels many a man to adopt it. Those Potatos which readily admit of inter-cropping are the short-topped ones. When Broccoli, Kales, Savoys, &c., are planted between rows of Potatos, the space between the rows ought not to be less than 3 feet. Tubers of mid and late season varieties intended solely for planting purposes in the garden should be grown, if possible, in a field, this affording the necessary change of soil; moreover, they can remain in the soil till perfectly mature, which could scarcely be carried out if the Potato-land were inter-cropped with other plants that might need moulching up before the crop was ripe for lifting. *H. C. Prinsop.*

DIFFERENCES IN PRUNING ROSES.—I have lately been enabled to inspect Roses in places situated 200 to 300 miles apart. Two points greatly attracted my notice. The first was the present promising state of the plants everywhere, and the second their semi-uniform state of growth. Taking the last first, it is surprising how slightly distance modifies times and seasons of growth between widely-separated localities. The whole of the wide area of Scotland and England, as represented by actual growths, made up to the middle of March, 1897, may be found between one inch and two inches growth made. And the most puzzling part of the problem lies in the fact, that the longest growths are by no means always found furthest south. Doubtless local circumstances of shelter, soil, &c., largely determine the inception and progress of growth. But then the environments of Roses are conspicuously local, almost erratic, rather than geographical, or affairs of altitude, latitude, and longitude. Hence the latest Roses I have seen this March have been those growing in or near Leoben. But every now and again we are surprised by sudden development of growth, and equal abnormal conditions of dormancy within short distance of their opposites. Doubtless many of these departures as to times and conditions of growth are the results of soil, site, culture, and specially seasons of planting and pruning, and ratio of vitality. The whole subject is of especial interest to the rosarian, as well as of great importance to the gardener, inasmuch as the later the spring growths of Roses, in reason, the safer the buds, and the more perfect the blossoms. We owe the promising state of our Roses this March to the mildness of the winter. So far, luckily a Rose anywhere has been exempted from the severity of the winter. Even searching March winds, unless at the time of the late severe storm, which was destructive through its sheer force rather than its cold, have always been wholly absent; and unless March, which hardly came in like a lamb, goes out like a very fierce lion indeed, it is not likely to deal very harshly with our Roses. In that hope, pruning and pegging-down are operations which are proceeding in all directions. Earlier pruning than there used to be is also another prominent sign of the times. In the choice between a loss of force and sap through the conversion of both into food for late frosts, and the sacrifice of force through bleeding resulting from late pruning, more rosarians now prefer the former to the latter risk. The wholesale pegging-down of perpetuals and Teas is also becoming more popular, and deservedly so, day by day. *D. T. F.*

HYBRID FUCHSIA.—I send some flowering shoots of a Fuchsia raised from seed obtained by crossing an ordinary greenhouse variety with *F. splendens*, the latter being the seed parent. The plant has been continuously in flower since August last, although only growing in a 6-inch pot, and now carries 147

blossoms in various stages of development. During the shortest days of winter it was very beautiful. *South Devon.* [A very fine flowering and elegant form; quite an acquisition. The flowers are pendulous, their colour is rosy-red, the tips of the sepals greenish. *En. J.*]

FRUIT NOTES FROM BARHAM COURT.

An hour spent in the fruit-room at Barham Court in company with Mr. Woodward affords an amount of interest seldom enjoyed elsewhere. The number of little-known varieties of Apples and Pears that are remarked is noteworthy. On the occasion of a visit, several good varieties of Pears and Apples were noted which had kept in first-rate condition. One of these was Pear *Passo Crassane*, a variety which was never very good at Mereworth Castle. In some places this Pear is only fit to eat after an unusually warm season, but at Barham it is seldom that it is not good. The fruit noticed were large, some of them weighing 12 to 14 oz., and flesh melting and flavour excellent. Dr. Hogg, in his *Fruit Manual*, remarks that at Teddington the variety was useless, as is also the case in many other places.

Olivier de Serres is another first-rate late Pear, which is in season after that nice fruit *Josephine de Malines* is past its best. The variety keeps sound when carefully stored in a suitable fruit-room—say, one having an average temperature of 40°, and in which the air is slightly moist; a common fault of fruit-rooms, especially those built above the ground, is that they are too dry. In a dry room the fruit, instead of keeping plump and fresh-looking, shrivels. Those persons who like a somewhat crisp, piquant-flavoured Pear, should grow this variety, affording the tree a good position, and keeping the roots near the surface of the ground, so that the fruits may mature well.

Nouvelle Fulvie is a Pear which has very juicy pulp, fine in texture, and sweet. The fruit keeps sound till February, and in some years rather later. Like most good Pears, the tree should be planted in a warm position, and the land is heavy and cold, and the latitude northerly, it should be given a good place on an east or west wall.

Josephine de Malines is one of our best Pears, and the fruits are of good dessert size. When properly ripened in a warm room, the flesh, which is of a salmon colour, becomes very melting. It is at its best in January, although it will keep till the end of February. *H. Markham.*

BERLIN.

A GENERAL horticultural exhibition will be held here from April 28 to May 9, to celebrate the 75th anniversary of the Horticultural Society of Prussia. This exhibition will be still larger than the noted one held in 1890. Over 11,000 square metres are already occupied, that is 4000 metres more than in 1890. The large chemistry-hall in the park of Treptow, in which the Industrial Exhibition took place last year, will be transformed into a large Rose-garden, where more than 900 metres of Roses will be seen. Artificial rocks will be decorated with *Rhododendrons*, &c.; and a waterfall will be illuminated by electric light in various colours. The building in which last year the Fisheries Exhibition was held will contain instead of the aquariums seven dioramas, and also rocks and grottos; in short, all will be enlarged. But strange to say, up till now there are not many Orchids entered, although the 1st prize for 100 plants is 1000 marks (£50), offered by the city of Berlin. English Orchid-growers would probably be successful if they would send their plants; out-flowers would also be welcome. As to Cyclamens and other plants there will be great competition, and it would be highly interesting to German gardeners to compare the English strains with their own. Address for the Programme and Schedule to the Secretary-Generals, Berlin, N., Invalidenstrasse 42.

CULTURAL MEMORANDA.

ADIANTUM CUNEATUM.

It is time to make preparations for the repotting of *Adiantum*, and at the same time the stock may be increased by the division of any plants that have become larger in size than is convenient. Prepare, in the first instance, a sufficient quantity of compost, taking care that it is sweet, porous, and moderately dry. In preference to the use of a great quantity of peat, I recommend a freer use of light fibrous loam, some weed half-decayed leaves, also peat broken roughly, and sufficient charcoal and sand to prevent stagnation and sourness. A water-logged or sour soil is inimical to most Ferns. The soil should be made moderately warm before potting, and all the necessary pots made scrupulously clean, and carefully drained by pebbles. Shake a good portion of the old soil from the roots and repot firmly, just slightly covering the young crowns. For some time afterwards the greatest care will be necessary in watering the plants, it being most easy to give more than is required. When the roots have penetrated the new soil, the supply of water may be gradually increased with advantage. Neglect in regard to the immediate application of water when necessary is sure to be attended by failure. Subsequently a little soot or liquid-manure may be added to the water occasionally, but soot-water should be clear. The common species, as *A. cuneatum*, will start freely in a temperature of 55° by night, and such a degree of heat is most conducive to a sturdy useful growth. Slugs and various insects are very injurious to the young and tender fronds, and must be sought for and destroyed. Young plants may be raised easily from spores, and in private gardens there are usually plenty of seedlings from self-sown spores. If these be taken up carefully and potted, and placed in a warm corner near the glass, they will quickly grow into nice serviceable plants. *H. Markham.*

EUPHORBIA (POINSETTIA) PULCHERRIMA.

As this plant seems to be creating some interest lately, I venture to mention a simple method of culture which answers well in the southern counties. The method also has the advantage of saving labour, as the plants practically require little or no attention for several months of the year. (See fig. 53.)

After flowering, the plants are kept dry until about May, and then cut back. When they have started into growth, say about June, they are planted out in the beds in the pits, which previously had done duty for forcing Potatoes, &c. After the *Euphorbias* have taken root in the bed, they are frequently exposed to the elements. I find that by the middle of August they have made fine strong cuttings, which, when rooted and grown on, frequently give bracts quite 18 inches across.

EUPHORBIA JACQUINIFLORA.

This is a lovely winter-blooming plant to grow in pots to furnish sprays for decorative purposes. The cuttings may be taken at the end of June or the beginning of July. Pretty good plants can be had by striking as late as the beginning of August. The cuttings may be placed in a hotbed, and after rooting, potted off, with a subsequent shift into 4 or 5-inch pots, and grown on in an intermediate temperature with plenty of light, especially towards the flowering period. With the above treatment we have measured sprays of flowers 19 inches in length, and I have no doubt larger sprays could be had with better treatment than ours usually have.

After the flowers have expanded they will stand for a couple of months in a conservatory with an average temperature of 45° to 50°. The sprays have a very pleasing effect amongst other plants. Of course, anyone requiring a larger quantity of smaller sprays for cutting would be inclined to start earlier in the season, and plant out, besides pinching the shoots occasionally. [In order to secure fine effects with plants in pots, some gardeners strike eight to ten cuttings in a 48-size, and repot without separating them. *En.*] *James Baxter, Bolder Grange Gardens, Lymington.*

GESNERA ZERINA.

This lovely old Gesnera is one of the most useful plants I know of for winter-stove decoration, but it has the good property of blooming at almost any desired season. The present month is a very suitable time to shake the tubers out of the spent soil, and start them for conioig into flower in the winter. Place the tubers rather thickly on the surface of well-drained pots or pans, filled to within 3 inches of the rim with any light kind of peaty soil and sand, from which it will be easy to separate the roots without injury later on, and cover them to the depth of about 2 inches. Afford a gentle watering, and place the pans in a temperature of 65° or 70°. No more water must be afforded than will preserve the soil in a moist state; and as soon as the plants are 1 to 2 inches high, they should be separated and potted, the number of plants going in a pot being a matter of choice and convenience. If fine specimens are wanted, one tuber in a pot only should be set. The plants should be stopped when about 4 inches high, or let alone in this respect. Gardeners usually put five plants in a flower-pot of 8 inches diameter, which suffice to make an effective mass. After potting, keep the atmosphere close and moist, but afford very little water until the roots start into growth. When potted off from the pans, they should be placed at least 1 inch deeper than before; for the reason, that they throw out the greater part of their true roots near the surface, and

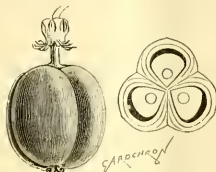


FIG. 53.—FRUIT AND SECTION OF *EUPHORBIA (POINSETTIA) PULCHERRIMA*.

it is by means of these roots that nourishment is chiefly obtained. The plants should be kept close to the glass during the summer months, but it will be necessary to shade them during bright sunshine, and the atmosphere should be maintained in a thoroughly moist state; but this must not be effected by excluding air or using heavy shading, otherwise the plants will assume a sickly and drawn appearance, and the foliage lose its colour and mottled beauty; moreover, they must not be syringed, as to do so spoils the beauty and freshness of the leaves. The chief enemy to this Gesnera is the mealy-bug. If there is one about the place, it is sure to get on this plant. *Edward Bennett, Queen's Road, Egham.*

NOTICES OF BOOKS.

AN ILLUSTRATED FLORA OF THE NORTHERN UNITED STATES, CANADA, AND THE BRITISH POSSESSIONS. . . . by N. L. Britton, Ph.D., and Hon. Addison Brown. . . . Three Vols. Vol. 1. (New York: Charles Scribner's Sons. Imp. 8vo, pp. 612.)

This is the first instalment of a work that will be valuable to botanists, and to growers of hardy herbaceous plants and shrubs, so many of which came originally from the area comprehended in this volume. It is a book on the plan of *Bentham's* (illustrated) *Handbook to the British Flora*. The arrangement of the orders is in conformity with that of Engler. Linley's proposal to end all ordinal names in *aceae* is followed, for which we may be thankful. The descriptions are accurate, concise, and clear, the illustrations helpful; there are more than

1400 of them in this one volume, and it is intended that every plant mentioned shall be thus illustrated. Of course, the woodcuts are small, but they are clear, and, what is of great importance, the proportions are in almost all cases considerably reduced, yet the actual size of the plant can be easily ascertained. As in "*Bentham*," tabular keys are given which are useful, but often not free from pitfalls for the unwary. The system of nomenclature adopted is what may be termed the Neo-American, in which an exaggerated respect for certain so-called "laws," but which are merely arbitrary devices to secure the greatest facilities to the student in his speaking or writing of particular plants, occasionally leads to great confusion, and breaks the very important rule that forbids us to attribute to any author anything that he has not said. As the synonymy is duly attended to, and a full index given, the inconvenience from these changes in nomenclature is lessened, but still in such matters we prefer equity to law. The book is a very valuable addition to the garden library

LE CHRYSANTHÈME À LA GRANDE FLEUR. By Anatole Cordonnier. (Published by the Author, Baillet, Nord, France.)

We noticed this work about a year ago, when it was first published, and are not surprised to find that a second edition has been called for. In style and get-up generally the new issue, considering the low price at which it is published (2fr. 50c.), leaves little or nothing to be desired; and, in addition to the cultural matter contained in the work as originally noticed, we find that the author has increased the size to about 200 pages, and added further explanatory illustrations.

So comprehensive is the scope, that M. Cordonnier's book must be pronounced at once one of the most entertaining and useful manuals that have appeared on the subject of *Chrysanthemum* cultivation. It is divided into four parts, the first of which deals with cultivation in its various phases, from the cutting to the blooming time; the second is devoted to a useful list of selected varieties for various purposes, with descriptions and a note as to the best bud to be taken; the third part deals with a variety of subjects interesting to his readers; and the concluding portion is in the form of a monthly cultural calendar.

M. Cordonnier is an able exponent of the art which he teaches, and a prominent exhibitor at most of the leading continental shows; he is also secretary of the Northern French *Chrysanthemum* Society, and therefore writes with authority.

English readers who understand French will find *Le Chrysanthème à la Grande Fleur* worthy of perusal, and should not fail to place it on their shelves for future reference, although, of course, it must be understood that it is intended primarily for continental growers. An important feature of the book is the indication of the proper bud to be taken in the case of many of the varieties described in the selected lists.

ORCHID NOTES FROM KEW.

EULOPHIELLA ELIZABETHÆ.—An example of this Orchid, which has thriven unusually since its introduction from Madagascar in 1893, is now in flower at Kew. Last year the plant matured two new pseudo-bulbs, which are *Onion-like*, purplish, about 1 inch in diameter, and bear four leaves each, the terminal one of which is 3 feet 9 inches long and 2 inches wide. The flower-spikes grow out at right angles, two from the base of each new pseudo-bulb, and from opposite points. The spikes are 1 foot long, and bear in the aggregate sixty-four flowers and buds, the strongest spike showing twenty-three. A second plant has developed three spikes, one of which bears about thirty flowers and buds. The plants are grown in pure sphagnum in 5-inch teak baskets suspended from the roof over a water-tank in a hot, moist house. Whilst growing they are kept saturated at the root. In the same house is a plant of the newly imported, and most remarkable looking *E. Peetersiana*, which seems

to be in a state of suspended animation. Has anyone succeeded in getting a plant of this Orchid to start?

Aerides Vandarum is now in flower in the cool Orchard-house, where it has grown vigorously since its removal, some five years ago, from the tropical-house to a shaded position along with *Odontoglossums*. It now covers a large slab of tree-fern stem covered with sphagnum-moss, in which its thick, wrinkled, grey roots evidently like to ramble. The subulate leaves are fully 8 inches long, and of a healthy dark-green hue. There are eight flowers open upon the plant, all excepting two being solitary, on short slender stalks; they are pure white, 2 inches in width, and the segments are waved and toothed in the most extraordinary manner. This species first flowered in this country in 1857, when it was figured in the *Botanical Magazine* as *A. cylindricum* (t. 4982). It is a native of the Sikkim Himalayas and Khasia at 5000 feet elevation, "hence it is a sub-tropical plant, a circumstance of which cultivators should take note." (Vetch).

Phalopsis Boxalli.—A plant of this rare little species, received from the Calcutta Botanic Gardens two years ago as *P. Parishii*, is now in flower. On the plant flowering, Mr. Rolfe at once recognised it as *P. Boxalli*. When described by Reichenbach in the *Gardener's Chronicle*, 1833, xix., 274, from specimens introduced by Messrs. H. Low & Co., it was said to be a native of the Philippines; but this is now known to be a mistake, this species having since been several times collected in Burma. It has ovate oblong green leaves, a short stoutish peduncle, bearing when strong as many as twelve flowers; the Kew plant, being small, has, however, only three flowers. The sepals are lanceolate, 1 inch long; the petals shorter, bright yellow, barred and blotched with dull brown; the lip is whitish, short, curiously bent back, with a pair of car-like lobes, and an erect purple bristle on the crest. Its nearest ally is *P. cornu-cervi*. A figure of it has been prepared for the *Botanical Magazine*.

Cycnocheilus Lobbii.—Two plants of this handsome Orchid, both males, are now in flower in the Kew collection. They were received last year from Demerara, where this species is indigenous, and they have grown vigorously all the winter in a hot, moist house. The strongest of the new pseudo-bulbs, which average eight inches in length, carries a spike of flowers, each four inches across, in colour dull yellowish-green, heavily mottled with brownish-purple; the narrow, oblong, fleshy lip is white and yellow, with a few conspicuous red spots. The column is 3 inches long, slender, very gracefully curved, and of a purple colour, except at the apex, where it is thicker and mottled with green. The raceme springs from the axil of a leaf near the apex of the pseudo-bulb, and is horizontal rather than pendulous. The leaves are falcate, plicate, 9 inches long, $\frac{1}{2}$ inch broad, and six or eight grow on each pseudo-bulb. During the growth of the flower-buds there is a copious secretion of nectar at the base of the pedicels, and behind the brown linear bracts which subtend each pedicel.

Arpophyllum medium is a Reichenbachian species discovered in Guatemala by Herr Wendland, to whom Kew is indebted for the example now flowering in the cool Orchard-house. It is similar to *A. giganteum* in habit, and has a dense erect spike of flowers 6 inches long, the colour being two shades of bright russet-purple.

Lalia glauca, better known perhaps as *Brassavola*, is now common in collections, but we do not often see so good a variety of it as is now in flower at Kew. It has four flowers, each 4 inches across, with broad regular segments, and a large well-formed lip, coloured creamy-white with a conspicuous blotch of purple on the disc. There is also a plant in flower of the common form.

Bulbophyllum barbigerum is now in flower, the plant has increased fourfold since Sir Trevor Lawrence shared with Kew his only example five years ago. It now has pseudo-bulbs 1 inch in diameter, leaves 2 inches long, with two flower-spikes each 6 inches long, and bearing a dozen of its singular hairy versatile flowers. W. W.

SOCIETIES.

ROYAL HORTICULTURAL Scientific Committee.

MARCH 9.—Present: Dr. M. T. Masters (in the chair); Mr. McLachlan, Mr. Michael, Rev. W. Wilks, Prof. M. Ward, Dr. Muller, Mr. J. T. Bonnet-Poë, Mr. Douglas, and Rev. G. Henslow (Hon. Sec.).

Beetles with Grapes.—Mr. McLachlan had received some small beetles found about the roots of Vines, about a quarter of an inch long, with a blunt thorax and rather sluggish in manner. They proved to be *Trux sabulosus*, and were introduced in the crushed grapes used for mixture. Not being vegetable feeders they do no harm to the Vines. The best trap would be a dried rabbit skin with the inner side downwards.

Larvæ of Daddy Longlegs.—He also received a sample of propagating soil in which Iceland Poppies were grown, abounding with the caterpillars of this fly. Bisulphide of carbon, cyanide of potassium (1 to 1 per cent. solution in water), or to remove the soil and burn it, were methods recommended in such cases.

Apple Root with Adonitidus Buds.—Dr. H. Muller exhibited a specimen, thickly covered in places with innumerable buds, usually known as "Burr Knot." The original cause is obscure, but Dr. Masters observed that such roots are often cut up and used for propagating.

Myricinths, &c., with Root Failure.—A collection of bulbous plants were received from Mr. W. C. Atkinson of Aighburgh, Liverpool, in which the roots had been very imperfectly developed, but then arrested and decayed. Mr. Douglas undertook to investigate the case, Dr. Masters observing that the bulbs might not have been properly ripened before lifting.

Drift Wood from Arctic Seas.—Dr. M. T. Masters exhibited specimens of wood obtained by Mr. Fisher. They had apparently travelled from Siberia to Franz Joseph Land, and consisted probably of the Siberian Pine *Centuria* (dwarf form), Willow, Elm, &c.

EDINBURGH BOTANICAL.

MARCH 11.—The members of the above Society held their monthly meeting at 5, St. Andrew Square, Edinburgh, on the above date, Dr. A. P. AITKEN in the chair. The private business consisted chiefly of the Treasurer's statement of accounts for the session 1895-96, which was found to be satisfactory.

The first item of public business consisted of a paper "On the Flucto-Micrography of *Opaque* Semis-sections, Recent and Fossil," read by R. A. ROBERTSON, Esq., M.A., B.Sc., of St. Andrew's; and some excellent specimens of photographs of sections of wood and fossil trees were exhibited. After a little discussion as to the manner of using the apparatus, the reader was awarded a vote of thanks for his paper.

The report of the excursion of the Scottish Alpine Botanical Club to Cleve in 1896 was read by Dr. W. CRAIG. In the meteorological observations for February, taken at the Royal Botanic Garden, and read by Mr. A. D. RICHAESON, the following items were noted:—Barometer: highest reading 30.555 on 9 p.m. on the 15th; lowest 29.256 on 9 a.m. on the 2nd; mean 29.853, this being 0.150 above the average. Shade thermometers: highest 66° on the 26th; lowest 25° on the 12th; frost occurred on three days. Radiation thermometers: highest in sun 101.0° on the 23rd; lowest on grass 17.0° on the 12th; frost occurred on grass on eight days. Sunshine: total for month 428 hours; sunniest day the 27th, with 5 1/2 hours, being 64 1/2 per cent. of the possible amount; sunless days 10. Rainfall: total for month 1.790 inch, being 0.781 inch below the average; greatest fall in twenty-four hours 0.515 inch on 25th; rainy days, fourteen.

TRURO DAFFODIL.

MARCH 16, 17.—The exhibition of Daffodils and other spring flowers held at Truro on the above dates must have filled Cornishmen with enthusiasm for these early-flowering plants. It was certainly one of the best collections of Daffodils that has been staged by any society in England for some time, and great credit is due to the officers for the zeal they have manifested.

The principal winner in Barr's competition was Miss CURRY, of Lismore, Ireland, who had a collection of fifty varieties consisting of some remarkably showy and distinct flowers. Lady M. BUCKLEMAN was the good 2nd. In all, there were about fifty to sixty entries for Daffodils only.

Rev. G. H. ENGLEHEART, of Appleshaw Vicarage, Andover, acted as judge, and he had difficult work, as the specimens were exceptionally uniform in quality.

In the classes for spring bulbs and hardy herbaceous plants there was also good competition.

Rhododendrons were a special feature, and an attractive exhibit came from D. II. SULLIS, Esq., Truro, who was 1st; T. HITCHENS, Esq., was 2nd. They were all grown out doors, and showed how much earlier these plants bloom in Cornwall

than in most parts of England. Cavellias from the open were also very fine, for a collection of which T. HITCHENS, Esq., St. Austell, was 1st.

Messrs. BARR & SONS, Coveat Garden, contributed a splendid collection of their well-known Daffodils and other spring flowers.

Mr. T. S. WARE sent a good collection of Daffodils, Anemones, and Janelias.

Messrs. J. FRAMES & SONS, of Farnham Royal, Slough, sent some beautiful specimens of their strain of *Crocus*is.

MANCHESTER ROYAL BOTANIC.

MARCH 16, 17.—Under rather favourable auspices as regarded weather, the show in the Town Hall, Manchester, presented a brilliant aspect. The Hippocampus from Messrs. Key, Liverpool, were gorgeous, and the Orchids, both for quantity, and in the quality of the plants, greatly excelled any previous spring show. The earlier breeds of Cattleyas were splendidly in evidence, and with *Masdevallias*, *Odontoglossums*, and *Cypripediums*, formed an interesting display. Many novelties were presented, but the Judges, taking a leaf out of the Instructions of the Council of the Royal Horticultural Society, were inexorable in keeping down the number of the awards, so that those made at this show, which counts for something, particularly in regard to the cultivation of Orchids, may be looked upon as well bestowed.

The chief honours, with Gold Medal, fell to ELIJAH ASHWORTH, Esq., Harefield House, Wilmslow, and we do not know, if we take the twenty-five feet of frontage table which two gardeners—the brothers Holbrook—put up, if ever Mr. Ashworth exhibited from his rich store a better lot. His Cattleyas formed a particularly rich group. His *Cattleya Trianae* Normani was a marvel of brilliancy, quite equaling Mr. BALL'S *C. hildrata*, of similar colour, that took a First-class Certificate at the Royal Horticultural Society's meeting at the Hill last autumn. Another with amethyst-coloured segments and of close lip to outline, with a lip forming a great circle with the lower lobe of intense crimson, backed up with prominent orange to fill up under the column was noted. There were one or two others which received an Award of Merit, but really, there was no easy select varieties here, that it must have been difficult to pass them by. The varieties of *C. Trianae* also were fine flowers. The *Deborahs*, which are still unacquainted, of *splendissimum grandiflorum* with numerous spikes of very high coloured flowers, was remarked. D. s. *Lesaeum* was also noteworthy, and D. noble nobilis (but not the giant Mr. ASHWORTH used to show) was prominent. A pretty, elastic-looking *Deudrohium noble* *Sunderlandii* of exquisite form, the whiteness very pronounced, and possessing a deep roseate coloured eye. D. Wardianum and D. *crassineum* were fine flowers; and there was a fairly good *D. s. Schneidreianum*. The pretty *Odontoglossum medium majus* was also noted. It is a plant too seldom seen in cultivation, and there were good *O. crispum* and *O. Andersonianum*. *Cypripediums* were represented in numbers. *C. Rothschildianum* being very fine; and one that still holds its own as a distinct and much valued species, viz. *C. x Olenus* with its fine ruby-coloured lines on the dorsal sepal, and a very good *C. x Olenus* of the cross-bredder. The whole of the plants were nicely put up among a variety of greenery.

A. WARBURTON, Esq., Vine House, Haslingden (Mr. Jno. Lothhouse, gr.), made his first effort as an Orchid exhibitor, at Manchester, and his collection was as select as it was valuable. The three *Odontoglossum crispum* which have been so much in evidence here and at Ghent were here again, via. Ann Charles, a full square flower, of exquisite spotting of a ruby tint, and with segments almost overlapping, received a First-class Certificate. This variety is sure to improve as the plant grows stronger. *C. Kegelii*, which received an Award of Merit from the Royal Horticultural Society, was passed over; and *Vanda Regia*, a very handsome spotted variety, and a fine plant, received an Award of Merit, as did also *O. Warburtonianum*. Mr. Warburton showed what is probably the finest *Cattleya Warszewiczii* delicate that has ever been exhibited. The flowers of exquisite size form, white segments, and a large, well-expanded lip, furnished with a circular spot of orange, resting on a flesh-coloured lower extremity. This should have received an award. There was also a bright-coloured *Deudrohium noble nobilis*, and several other good things.

THOMAS STRATTON, Esq., St. Paul Hall (Mr. R. Johnson, gr.), obtained a First-class Certificate for *Cypripedium x rubens* (*bellatulum x callosum*). The colours here are very vivid, and so is the spotting. The same gentleman also obtained an Award of Merit for *C. x bellatulum x C. Rothschildianum*. The petaliferous segments here are twisted not unlike the mouth-board of a fish, and although the colouring is not so striking, the formation is singularly attractive. There were *Deudrohies* in some variety, and a fleshy-green piece of *Geogone cristata* alba.

W. THOMPSON, Esq., Walton Grange (Mr. Stevens, gr.), had some particularly fine *Odontoglossums*. The flowers of *Odontoglossum excellens* were as large and as full as the finest *O. Pescatorei*, the yellowish shading on the limbs being very attractive, the flower justifying the award of a First-class Certificate. All the rarest and best of the new *Odontoglossos*

were represented in this exhibit, including *O. Wilckeianum*, an *O. Pescatorei* of odd formation, its panicle being a bushy branching; *O. triumphans*, and *O. luteo-purpureum*, the latter with two spikes, each with twenty flowers, being singled out as meriting a Cultural Commendation.

S. HINCHIFFE, Esq., Hale, had a fine group of well cultivated plants—nothing very rare amongst them, but casting a dash of colour all over. An example of *Dendrobium Wardianum*, which received a Cultural Commendation, was loaded with hundreds of flowers, and had one individual growth of about 7 feet high. His specimen of *D. nobile* was also crowded with flowers, and a most effective specimen plant. There was also a capital specimen of the beautiful white-lipped *Miltonia*, and, not many other gardeners, an *A. G. WEST*, Esq., Brecklands, showed a fine piece of *Dendrobium melanodesmum*, a rather showy *D. Owenianum*, a very rich-coloured *D. nobile nobiliss*; the new *Dendrobium × Broadhurstianum*, said to be a cross between *D. nobile* and *D. Wardianum*, but showing traces of *D. splendissimum grandiflorum*.

ARCHEBAUD RAWSTON, Balderstone Grange, exhibited a well-flowered plant of *Dendrobium Hildebrandii*, which received a Cultural Commendation. E. F. MOORE, Esq., Bourton-on-the-Ware, received a Cultural Commendation for *D. macrophyllum superbum* loaded with flowers.

The nurseryman's exhibits were upon the whole very good. Mr. WATSON, of the Chesham nursery, well to the left, and being rewarded for his pains with the Society's Gold Medal. We have seen Mr. Cypher shrouged in Dendrobes that on this occasion, still he strove a grand lot of well cultivated plants; *Dendrobium Cypheri* was very well shown. It is a fine light form of *D. nobile*, and is also shown by Mr. D. G. Dendrobes, but there are so many now of *D. nobile* and *D. Ainsworthianum* section that one tires of looking at them. *D. × Chelleanense* is a good break of the *D. luteolum* type, and its singular spoon-shaped lip makes it different from most others. The most interesting of the good Epidendrum of the rhizophorous order exhibited by this firm, the bright orange-scarlet and prolific-flowered *O. Briticum* being one of the best. The *Odontoglossum* were well represented, and Miltonias of the *Rozoi* order; also *O. Hilli kenoglossum*, a bright and beautiful *Cypripedium* was represented in quantity, in regard to *O. Hildebrandii* and *O. Elliotianum*. *C. ciliolare*, was finely shown in this group. An Award of Merit was voted this group.

Mr. JOHN ROBSON, Bedford, decorated the orchestra with the best lot of *Dendrobes*, one of which, named Robson's noble giganteum, received an Award of Merit. There were several good *Lycaste Skinneri* here, well grown and flowered; and the group of *Cymbidium chureum* was particularly noticeable. Other *Cymbidiums* of the *Levi* section were prominent; one or two good plants of the *Godingii* variety; *D. splendissimum* nicely in flower, and quantities of the white *Coleogyne* formed a fringe to the whole.

Messrs. CHABLESWORTH & Co., Bradford, had some choice plants; and a First-class Certificate was awarded them for *Sophro-Lelia Moreletian*, which represents a *Lelia flava* and *Saprophites* combined, bringing out a singular mixture of orange and bronze, through amalgamation of the two species which is probably more scientifically than commercially useful. The Award of Merit was given to Cattleya Trianae, with the perfectly-formed segment of flamed blush, and an unusually large inflated lip of a rich ruby colour, with a orange blotch towards the column, was well merited. Flowering plants of *Cymbidium Lovianum* in fine variety, and the pretty *Cypripedium Druryi* and *Buryan*, as well as the handsome *C. scelligerum*; *Odontoglossum scopum superbum* (Award of Merit) of large size and flowers of good substance; and some excellent *O. crispum* were observed.

Messrs. HEATON & Sons, Chesham, had a bright lot of *Dendrobium*, *Cypripedium*, and *Odontoglossum*, but they were far too crowded to be effective. We noticed some *O. crispum* of fine quality, and an extra fine *O. luteo-purpureum*, *Cypripedium candicans*, and *C. niveum*, as well as *C. Fatio-Lavencanum*, and a particularly rich-flowered *C. venustum*.

Messrs. R. S. WILLIAMS & SON had a miscellaneous lot of spring-flowering plants. The Orchids were choice, and the singular *Cirriophallum picturatum* commanded attention—the lip of this flower is like a canoe, and the flowers are set in a semi-circle. *Masdevallia Schroderi* is one of the brightest novelties we have seen. An Award of Merit was given to *O. crispum purpureum*, for colour, we presume, also an Award of Merit for a hankin coloured *O. crispum*—an acquisition.

Messrs. LEWIS & Co., Southgate, had several good hybrid *Cypripediums*. *Odontoglossum nutans superbum* received an Award of Merit; the flower was of fine form, the speaking and blotching being bright, and the plant was well cultivated. An extra fine *O. Pescatorei*, with fine flushing and some spots, was exhibited; also the rather pretty Cattleya *dubosa lilacina*.

Messrs. R. F. KEN & SONS had a grand collection of *Vanilla*—comprising *Vanilla* had a self Society's King, and *Sappho*, a very good match; *Lina* and *Niche* are great improvements in the *marginata* conspurcous colour type; and *Eurylice*, and, in fact, many others, are clear in colour, good in substance and in form.

Messrs. DICKSON, BROWN & TAIT had a fine collection of *Vanilla*.

Messrs. DICKSON, H.L., Chester, had excellent *Daffodils* and showy cut border flowers.

THOS. BROOM, Esq., Llandudno, sent charming boxes of cut Orchids and cut border flowers.

Mr. P. WEARNE sent a very fine *Odontoglossum trianum* plants from the garden, with a spike 18 inches long, and full of rich flowers.

LAW NOTES.

ASSESSMENT OF GLASS-HOUSES AND GARDEN LAND.

The assessment of glass-houses and garden land in the Brentford Union is not giving a great deal of dissatisfaction to market gardeners and fruit and flower growers, and I recently quite a long list of appeals were disposed of by the Assessment Committee of the Union, with very slight reductions made in a few cases. The valuation list was prepared last year by Mr. C. F. JONES, professional valuer to the guardians, and in September last several appeals were made without avail. This year the appellants were fortified by the expert evidence of Messrs. Protheroe & Morris, a member of whose firm stoutly contested each assessment. Nearly all, however, were governed by one point—*how the land should be assessed*—as building-land, or as it stood from year to year.

In the chief case taken, that of a florist at Chiswick, the land was situated close to the main road, and in extent it was 2½ acres; the appellant paid £3500 for it, and upon it he erected a handsome show conservatory, costing between £600 and £700, and there were other houses of smaller character, the total spent on the buildings being £1675, the outlay for site and buildings being £5175. Upon this the Assessment Committee placed an assessment of £223 gross, or £175 net. For the appellant it was contended that the value for the land was excessive, but inasmuch as appellant's father and grandfather had held it, there was some sentiment in the matter, and moreover it was near appellant's shop. The rent it was really worth was £10 an acre, or £25 in all. The sh-house was an extravagant structure, and worth only a value of £425, and the other houses could be erected at 4d. per cubic foot, which equalled £550. There were some more houses valued at £709 12s. 4d.

Upon these figures, appellant contended that he was entitled to a 25 per cent. upon the buildings; upon the show-house the value should be 5 per cent. only with a fifth deduction, and the other buildings should be dealt with in the same way. The gross should be £117, and ratable £92. It was further contended that it was contrary to the Act of Parliament to rate the land as building land. If it were so taken, all the buildings should be taken off it; and without them, no person of the appellant's trade could carry on his business. He obtained the land for the purposes of his trade, not as a building site. The real way to deal with this question of the land would be to take it out what it would be for from year to year after making the necessary deductions for outgoings and repairs. Replying to these various arguments, the committee urged, that on appellant's own figures, he brought the total up to £5175, and upon that, he would surely not be content with less than 4 per cent. profit. They looked at it from a common-sense point of view, that if he did not make that at the least, the site was so valuable for building that he could sell it in building plots.

Obviously appellant derived a great advantage from his houses at that particular spot, or he would go outside the London area, where he could get land at 30s. an acre good enough to put glass-houses upon. He would not have thrown £3500 capital away over the land—even from sentiment—if he did not see that he was going to get some good value from it as a return. They declined to entertain the view that they were bound to put a value upon the land irrespectively of the price paid for it. It was near appellant's shop, near his customers, the rail and the main road. If a man had what was good building land, which in Chiswick would be the point of view, and he would use it in any other way, the committee was in no way bound to rate it as if it were out in the middle of the country. They confirmed the assessment, and left the appellant to go to Quarter Sessions if he were still dissatisfied.

In the course of another case which came from Twickenham, the committee urged as a ground in support of raising an assessment on houses, that next year half the rates would be allowed under the Agricultural Rating Act. Mr. Morris, in reply, urged that this had nothing whatever to do with the matter of local assessment. That was a matter for the Imperial Exchequer solely. The rejoinder of the committee was that it enhanced the value of the land in the rental, because a large part of the deductions in the

nature of outgoings was taken off. If part of a man's rates were repaid him, he must reap a benefit, and this should be taken into account in considering the lettable value of the land. Mr. Morris demurred to this view. The Act was passed to benefit the tenants; here was the assessment committee making a tenant suffer for it, and obviously using it as a lever to get more out of him. It was deliberately attempting to take away all the benefit which the Act conferred. The Act might only be in force for five years, and at the end of that time was it reasonable to suppose that assessments would be granted a very reduction in consequence. The committee in this case granted a small abatement.

CHARGES FOR GARDEN-WATER.

Judge Bagshawe, of the Brentford County Court, sat in his private room at the Middle Temple on Saturday last, for the purpose of concluding the case of the "Grand Junction Waterworks Company v. Cowley." In this case, Mr. Victor Cowley, of Ealing, Secretary to the Ealing Water Consumers' Protection Committee, was sued by the company for £1 1s. for water used by the defendant for other than domestic purposes—namely, for garden purposes during the season of 1896; or, alternatively, for £1 1s. damages for the use by defendant of water of the plaintiffs for such purposes during such period. The case was defended for the purpose of obtaining a decision from his Honour on the legality of the company's insistence upon the minimum payment of a guinea a season for water supplied for garden purposes irrespective of the size of the garden. It was admitted that water was used in defendant's garden during the season of 1896, and that the company had a right to make a special charge for it; the defendant had, therefore, paid 5s. into Court, and denied further liability. Judge Bagshawe, in giving judgment, said that he found the offer to supply water to gardeners by means of a hose for the sum of 1 guinea was reasonable, and the use of the water was an implied acceptance of the terms imposed by the company. In fixing the charge, the company were bound to take into account not merely the minimum amount of water used, or even the amount used by the reasonably-minded consumer, but also that taken by the numerous body of consumers who construed their rights with the utmost liberality towards themselves. Considering all this, he held the charge of 1 guinea to be fair. He gave judgment for the company for the amount claimed, with costs upon the highest scale. He also certified, for the purposes of an appeal, that the question litigated was of importance, and of general and public interest.

Obituary.

MR. J. CRUICKSHANK, FROMGORE HOUSE GARDENS.—To the numerous gardeners who, as young men, have, during the last fifty years, seen through the Royal Gardens, Windsor, the news of the sudden death of James Cruickshank will be received with much regret. Although seventy-two years of age, he enjoyed good health, and died practically in *harr-ss*, as he was attending to his duties on the day of his death, March 4. He came to the Royal Gardens from Castle Fraser, Aberdeenshire, in July, 1847; consequently, had he lived till July next, deceased would have completed fifty years in the Royal service. After serving as journeyman in the various departments for seven years, he was appointed foreman in the Castle Gardens and Slopes, where he remained another seven years; and when the Crown took over Fromgore House on the death of H.R.H. the Duchess of Kent, in 1851, he was appointed foreman of Fromgore House Gardens.

He was a gardener of the old school, with a good knowledge of hardy plants and shrubs, also wild flowers, and could tell many a good tale of the rambles he took in Scotland, in search of new and rare species, during his botany life. Being of a happy and jovial disposition he was very popular, and never happier than when quoting "Lobby Burus," whose poems he seemed to have learned by heart.

The funeral took place at Windsor Cemetery on the 9th inst., and was largely attended, the remains being followed to the grave by Mr. O. Thomas, the Queen's head-gardener; Mr. W. Tait, bailiff; all the foremen at the Royal gardens, deceased's men, relatives, &c.

Among the many handsome wreaths sent to his funeral, as tokens of sympathy and respect by numerous relatives and friends, was a beautiful one of immortelles, having on a card attached—"From Queen Victoria."



THE

Gardeners' Chronicle.

SATURDAY, MARCH 27, 1897.

JUAN FERNANDEZ.

THE appearance of a new "flora" * of these beautiful and highly interesting islands is perhaps sufficient justification for giving some particulars of their history and vegetation in this place, especially as the original is in Spanish, and therefore not likely to come under the notice of many of the readers of the *Gardeners' Chronicle*. To save the reader the trouble of looking them up, I will give some particulars from my own account of the islands in the *Botany of the "Challenger" Expedition*, merely premising that the figures relating to distances, &c. are approximations. Originally, the name Juan Fernandez was applied to a group of three volcanic islands, of which the two principal were called Masatierra (meaning nearer the mainland) and Masafuera, indicating their respective positions with regard to the mainland. In this country, the name Juan Fernandez is ordinarily applied to Masatierra only. This island, which is much the larger of the two, lies in about 33° 45' S. latitude and 80° W. longitude, or about 400 statute miles from the coast of Chili. The area is about 20 square miles, and the greatest altitude 3000 feet. A mile to the south is a small island called Santa Clara, or Goat Island. Masafuera is some ninety miles westward of Juan Fernandez. It is a rocky mass, having precipitous coasts, extremely difficult to land on.

Juan Fernandez † was a favourite resort of the buccaners in their expeditions against the Spanish possessions in South America, and the scene of many strange, exciting, and even romantic events; not the least of which was Alexander Selkirk's solitary existence in the island during a period of four years and four months. It is almost superfluous to mention that it is generally believed that the events of Selkirk's life in Juan Fernandez formed the foundation of Defoe's famous and familiar novel, *Robinson Crusoe*; though, from motives of his own, the author transferred the scene to an island off the mouth of the Orinoco river in the West Indian seas. But those who read the narratives of the early voyagers in the Pacific know that they contain materials for many a story. As a matter of fact, Defoe's inspiration may have been derived from the adventures of an earlier sojourner in the island than Selkirk, as set forth in Captain William Dampier's account of his first voyage round the world, in a privateer ship, as he himself designated it. They arrived at "John Fernando" in March, 1684, and they went ashore, as

Dampier relates, to seek "a Moskito Indian," whom they had left on the island when they were chased hence by three Spanish ships in the year 1681. I venture to extract the paragraph in Dampier's narrative relating to this man's captivity in the island, although it is neither horticultural nor botanical:—

"This Indian lived here alone above three years, and although he was several times sought after by the Spaniards, who knew he was left on the island, yet they could never find him. He was in the woods hunting for goats when Captain Watlin drew off his men, and the ship was under sail before he came back to shore. He had with him his gun and a knife, with a small horn of powder, and a few shot, which being spent, he contrived a way, by notching his knife, to saw the barrel of his gun into small pieces, wherewith he made harpoons, lances, hooks, and a long knife; heating the pieces first in the fire, which he struck with his gun-fint and a piece of the barrel of his gun, which he hardened—having learnt to do that among the English. The hot pieces of iron he would hammer out and bend as he pleased with stones, and saw them with a jagged knife, or grind them to an edge by log labour, and harden them to a good temper as there was occasion. All this may seem strange to those that are not acquainted with the sagacity of the Indians; but it is no more than these Moskito men are accustomed to in their own country, where they make their own fishing and striking instruments, without either forge or anvil, though they spend a great deal of time about them. . . . With such instruments as he made in that manner he got such provision as the island afforded, either goats or fish. He told us that at first he was forced to eat seal, which is very ordinary meat, before he had made hooks; but afterwards he never killed any seal but to make lines, cutting their skine into thongs. He had a little house or hut half a mile from the sea, which was lined with goats' skin; his couch or barbecue of sticks lying along about 2 feet distant from the ground, was spread with the same, and was all his bedding. He had no cloaths left, having worn out those he brought from Watlin's ship, but only a skin about his waste. He saw our ship the day before we came to an anchor, and did believe we were English, and therefore kill'd three goats in the morning, before we came to an anchor, and dress them with Cabbage, to treat us when we came ashore. He came then to the sea-side to congratulate our safe arrival."

I will conclude these allusions to the probable original, or originals, for he may have drawn something from both, of Defoe's hero by adding that Alexander Selkirk joined a privateering expedition organised by Dampier, which sailed from Kinsale in 1703; and he was left on the island at his own request in October, 1704. The first edition of *Robinson Crusoe* was published in 1719. Dampier was unfortunate in his expedition, but he accompanied Captain Woodes Rogers on a later one, and was with him when Selkirk was rescued in 1709.

Dr. Johow's *Flora* contains very few indigenous plants not included in my enumeration in the *Botany of the "Challenger" Expedition*. His is altogether a much more comprehensive work than mine; yet I am gratified to say that he gives me full credit for what I was able to accomplish under less favourable conditions. He has spent several months in the islands, and from actual observation and study of the plants in their homes has been able to correct some of the errors of previous writers; and, although he describes half-a-dozen new species, his total is rather less than mine, in consequence of the reduction of a number of spurious species.

All travellers agree in describing the vegetation of Juan Fernandez as very beautiful, which the admirably executed views in Dr. Johow's

attractive book fully confirm. As in most remote islands, the number of species, as compared with the nearest continental areas of the same extent, is small, whilst the number of genera and orders represented is relatively large. Dr. Johow's numbers are 7-143 species belonging to eighty-seven genera and forty-three natural orders. These numbers include only the flowering plants and Ferns, almost half of which are peculiar to the island, and forty-two out of the total are Ferns. Singular to say, not a single *Lycopodium*, nor a *Selaginella*, has been found; yet filmy Ferns abound, there being upwards of a dozen different species. Noteworthy among the Juan Fernandez Ferns are *Dicksonia Berteroana* and *Thyrsopteris elegans*, the latter an endemic genus of one species.

Apart from Ferns, few of the plants peculiar to the island are in cultivation; and, indeed, few of them are particularly suitable for cultivation.

Here, as in many other islands—St. Helena, the Chatham group, and the Galapagos, for example—small arborescent Composite, many of them resiniferous, form a noteworthy feature in the indigenous vegetation. The genus most numerous in species is *Robinsonia*, so named by De Caudolle in commemoration of Defoe's hero; but *Dendroseris*, belonging to the same group as the Sow-Thistle, *Sonchus*, some species of which attain the form and dimensions of miniature trees in Madeira and the Canaries, is still more remarkable, on account of the size and showy character of the flower-heads. Dr. Johow describes a new species, *D. gigantea*, from 15 to 20 feet high, "with a trunk as thick as a man's thigh;" and about twenty years ago Messrs. Veitch imported and flowered *D. macrophylla*, a species of somewhat smaller dimensions, having deep yellow flower-heads nearly 3 inches across. There is a coloured figure of this in the *Botanical Magazine*, pl. 6353. It was sent home by Mr. Downton, collector for Messrs. Veitch, who also discovered, in the same island, the beautiful *Wahlenbergia tuberosa*, *Botanical Magazine*, pl. 6155.

Another composite was named *Vendredia* (from *vendredi*, French for Friday) by the late Dr. Baillon, after Crusoe's man Friday, but this name has to give way to the earlier *Rhynodendron*. I, myself, when drawing up my account of the flora of Juan Fernandez, having to deal with a shrubby plant of the Boraginaceæ, which had been erroneously referred to *Cynoglossum*, named it *Selkirkia*, on the ground that Selkirk deserved this kind of distinction quite as much as Defoe's imaginary hero.

In addition to some charming landscape views, Dr. Johow figures a number of the more remarkable plants; among them *Dendroseris mirantha*, *Plantago fernandeziana*, *Myrcogenia fernandeziana*, *Gunnera peltata*, *Santalum fernandezianum*, *Jussia australis*, and *Dicksonia Berteroana*. The *Plantago* is remarkable in having a stem from 3 to 6 feet high, in which character it is only equalled by the *Sandwich Island P. princeps*. *Myrcogenia fernandeziana* is the commonest and tallest tree in the island, growing from 60 to 80 feet high; and it furnishes a valuable and durable timber. It is a member of the Myrtaceæ. *Gunnera peltata* forms a trunk sometimes as much as 20 feet long, the lower part of which is horizontal, and the upper oblique or erect. Its large peltate leaves are sometimes more than 6 feet across. I believe it is the only arborescent species. From a geographical stand-point,

* *Estudios sobre la Flora de las Islas de Juan Fernandez*, by Federico Johow. A espansa del Gobierno de Chile. Santiago de Chile: Corvantes, 1896, 4to, pp. 209, with 18 plates, 2 maps, and some figures in the text.

† Where not otherwise explained, or evident from the context, Juan Fernandez is here used in the restricted sense, and is equal to Masatierra.

the Sandalwood—*Santalum fernandezianum*—is, perhaps, the most interesting element in the flora. Until recently, its existence was little more than traditional, though dead wood found in the main island had been declared by experts to belong to the genus *Santalum*. Bertero in 1830, and Gay in 1849, mention a Sandalwood as having been abundant, and the latter refers it to *Santalum album*, and states that it all perished, or was destroyed, in one year, though by what agency he does not inform us. Its recent history is this:—In 1868 branches of a pleasant-smelling wood, bearing a few leaves, were found amongst some fuel purchased for one of the ships of the Chilean navy. This was microscopically examined, and identified as Sandalwood. In 1888 Mr. F. Philippi succeeded in obtaining a small bundle of twigs bearing leaves, and one of them a few flower-buds; but it was not till 1892 that he ventured to publish it under the name given above. Still, no living example of the tree had been seen by a botanist. As Dr. Johow says, the reader will understand his joy, after five weeks' fruitless searching, and the offer of a substantial reward, on being shown a tree of respectable dimensions by a colonist, Pedro Arredondo. This tree was about 30 feet high, with a trunk 4 feet 6 inches in girth, and it was situated in the middle of a wood in Masatierra. Fortunately, too, it was in flower, so that Dr. Johow was able to complete the description of the species, which is closely allied to *S. Freycinetianum*, a native of the Sandwich, Marquesas, and Society Islands. The interest attaching to the discovery of a true Sandalwood in Juan Fernandez may be realised from the facts that no species inhabits the mainland of America, and the nearest habitat of any other species of the genus is in the Marquesas Islands, some 3500 miles distant from Juan Fernandez. From Dr. Johow's researches, there is now no doubt that Sandalwood was formerly abundant, both in Masatierra and Masafuera. The lucrative nature of the Sandalwood trade led to the almost total extinction of the trees, not only in Juan Fernandez, but also in the Sandwich and other islands in the Pacific. Seemann (*Flora Vitiensis*, pp. 209—215), gives a brief history of the Sandalwood trade in the Pacific, from which it is evident that it was carried on in the most reckless manner, and at an appalling loss of human life, both among the ferocious natives and the unprincipled traders of various nationalities.

The Chonta, or Palm of Juan Fernandez, *Juania australis*, is endemic in Masatierra, where, contrary to Moseley's impression, it is still abundant, being spread all over the wooded part. It is described as very slender and graceful; the trunk, though rarely exceeding 8 inches in diameter, rises high above all the other trees of the forests, where its head of waving feathery leaves is very effective, and when adorned with festoons of its scarlet fruit it is very striking and attractive. It is now in cultivation at Kew and elsewhere, and likely to become as great a favourite among half-hardy Palms as *Howea Belmoreana*, from Lord Howe Island.

The tree Ferns, three in number, *Alsophila pininata*, *Dicksonia Berteroana*, and *Thyrsopteris elegans*, constitute a beautiful and graceful feature almost everywhere in the woods, or forests as they are generally designated. Dr. Johow gives a view in which tree Ferns form a lovely foreground, and he also gives the portrait of a plant of *Dicksonia Berteroana*, having

several stout lateral branches. This Fern, he says, attains truly gigantic dimensions in Masafuera. All three of these Ferns are in cultivation in this country.

In conclusion, I can only add, that Dr. Johow's book does great credit to him and the Chilean Government, at whose expense it was published, and will perpetuate some of the beauties of the historically and botanically interesting Juan Fernandez. *W. Bolting Hensley*.

ORCHID NOTES AND GLEANINGS.

DENDROBIUM NOBILE NOBILIUS.

In the language of the astute advertiser, "Imitation is the best evidence of Merit," but where applied to very fine and totally distinct varieties of showy

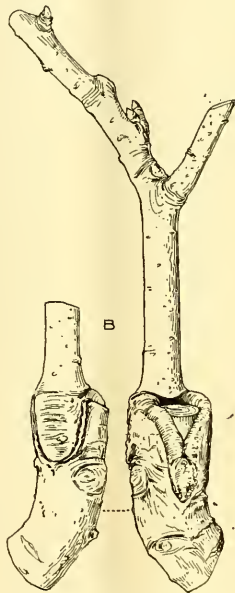


FIG. 59.—AN OLD AND DEFECTIVE METHOD OF RIND-GRAFTING. (SEE P. 199.)

but variable species of Orchids, it gives a lot of trouble to those who wish to be accurate in their names. Few plants have had their names appropriated more than *Dendrobium nobile nobilius*, the true stock of which can only proceed from the weakling picked up by Mr. James at Stevens' Rooms some twenty years ago, and which, after being nearly killed by being exhibited by Messrs. Rollison at the great quinquennial exhibition at Ghent in 1878, found its way back to its original owner, who from the pseudobulbs (for the leading growths were dead) succeeded in raising half-a-dozen plants, from which all the plants that are true to name have come. *D. nobile nobilius* is not an ordinary case of variation, for to one who knows its stout, tall growth, and its richly coloured flowers, there is nothing like it. And yet scarcely an importation of *D. nobile* arrives which does not produce varieties which in the eyes of their affectionate owners are either the true thing, or better. On the continent it is even more badly represented than in England, and it is re-assuring to

get flowers of the right thing, taken from a plant of the original stock, from Messrs. Linden, of Brussels. They are a little over 4 inches across, and the sepals and petals are of that deep rich amethyst purple so peculiar to the variety. There are plenty of good and finely-coloured *D. nobile*, but there is but one *D. nobile nobilius*, and the only chance of confusing it with another is to get a badly-grown specimen of it to compare a well-grown example of another dark form with. *J. O'B.*

EULOPHIELLA ELISABETHÆ.

Few Orchids of recent introduction have been so well received as *Eulophiella Elisabethæ* when offered in quantity by Messrs. Protheroe & Morris for Messrs. F. Sander & Co., in June and July, 1893. The plants then sold were good and sound, and there seemed to be nothing to prevent the plant becoming a useful subject, and a general favourite. But when cultivators began to compare notes of its behaviour in their hands it soon acquired the reputation of being "a bad doer;" a character it seems to have deserved, for probably but a small percentage of the importation now exists. But as with most other plants of bad repute an occasional specimen is met with growing in the most vigorous manner, giving no trouble to the grower, flowering regularly and profusely, and thus demonstrating that it is from no peculiarity in the plant itself that failure arises, but from a want of knowledge of how to treat it, or a lack of the necessary convenience. A case in point is the specimen of *Eulophiella Elisabethæ*, purchased by Geo. C. Raphael, Esq., Castle Hill, Englefield Green, Surrey (gr., Mr. H. Adams), at the first sale in 1893, and which has flowered grandly every year. At present the plant bears three stout spikes, averaging thirty-five wax-like white flowers, tinged with purplish-rose on the reverse side. The plant is grown in a warm, rather moist house, and is kept well supplied with water at the roots, especially while in active growth.

CATTLEYA WARNERI

grows to a height of about 16 inches, the leaves being about 3 inches across, of a thick leathery texture, dark green in colour. The flowers are large and showy; they are sometimes produced with as many as five on a spike, but this is an unusual number. It should be grown in a pot or a basket suspended from the roof of the house, in a compost of peat and sphagnum-moss. It requires a good amount of heat during the growing season, which is in the winter and spring months; the flowers are produced from the uncompleted bulb. This is matured soon after the flowering time is over. The plant requires a good season of rest, and during this period water should be withheld, only just sufficient being given to prevent the shrivelling of the bulbs. *Orchid Album*, vol. xi., part 131, p. 521.

DENDROBIUM TRANSPARENS ALBUM

Requires the same treatment as that given by us for *D. transparens* in vol. ix. of this work, plate 396. Like the type, it is well adapted for growing in small teak-wood baskets, or in shallow pans, so that they may be suspended near the roof-glass, fully exposed to the sun and light; some shading, however, will be necessary when the sun is very powerful. An abundant supply of moisture to the roots as well as in the atmosphere, and a judicious admission of air, are conditions essential to the welfare of the plant. During the growing season especially, the supply of water must be liberal, but during the resting period it may be reduced to a minimum, just sufficient water being required to prevent the pseudo-bulbs becoming shrivelled. As the species flowers after the resting period, the plant requires a moderate amount of water at its roots as soon as the flower-buds begin to show to enable the plant to develop the flowers, which will last much longer in beauty when properly nourished. *Orchid Album*, vol. xi., part 131, p. 522.

CYMBIDIUM TIGRINUM

was discovered by the Rev. C. S. Parish in the mountains of Tenasserim, at an elevation of 6000 feet, as far back as 1893; it is, however, far from common in collections, as importations are neither large nor

numerous. The cool end of the Cattleya-house will be found most suitable for this plant. It should be potted in a compost of good rough fibrous peat and loam, the latter material predominating, with ample drainage. Plenty of pot-room should be given, as the plant produces thick, fleshy roots freely. During the growing period a copious supply of water will be found essential, which afterwards may be gradually diminished. Propagation may be effected by dividing the pseudo-bulbs. The plant which forms the subject of our plate, flowered in the collection of H. S. Leon, Esq., of Bletchley Park, Bucks, where so many choice specimens of Orchids bear testimony to the able management of Mr. Hislop, the gardener. *Orchid Album*, vol. xi., part 131, pl. 523.

CYRIPEDIUM GRATRIANUM.

To succeed well in growing this plant, it should be potted in a mixture of brown peat fibre and living sphagnum-moss; ample drainage should be given, as otherwise the peat is apt to become sour, which

counties, from my instructions, and has proved a success during the last three years, a vigorous growth having always followed. It can be employed upon stocks varying in size from half an-inch to an inch-and-a-half in diameter, and scions may be made from wood one or two years old in the case of fruit-trees.

Fig. 59 represents an old mode of rind-grafting, the defects of which can be seen at the place of union. Figs. 60, 61, illustrate the preparation of stock and scion for the method that I advocate—in the one case upon a small stock, and in the other upon a larger one. In fig. 62 the graft is shown when completed and waxed, and in fig. 63 is illustrated the effect of one year's growth after the grafting has been done. It will be seen to offer more than ordinary resistance against the wind. For the living specimens I send you I am indebted to Mr. Crawford, gardener, Severn House, Ironbridge, and to his employer, as showing the use made of my instructions in the gardens there two years ago. *Robert Smith, Horticultural Instructor, Shropshire County Council.*

cultivation—the truth being that not one of these bulbs out of overy hundred outlives its second season in the open air. The same statement is true of the pretty cream-coloured forms of Trumpet-Daffodil known as *pallidus procox*, which collectors have done their best to obliterate from its headquarters in the Basses Pyrenées. At the time of its first introduction in quantity, a dozen years ago, one or two of the largest growers of Narcissus for cut bloom invested considerable sums in bulbs of this last plant, but it speedily showed its resentment of cultivation, and disappeared. On some soils it will live for a few years if planted in turf, but I know no other way of keeping it alive. Of the beautiful little pure white pseudo-Narcissus, *N. moschatos* of the High Pyrenees, even this much cannot be said, for except in a very few localities of quite exceptional soil and climate, it is ungrowable. My advice to those who admire the small wild species of Narcissus mentioned, is to grow them in successive generations from seed, sowing it in pots plunged in ashes in a cold-frame.

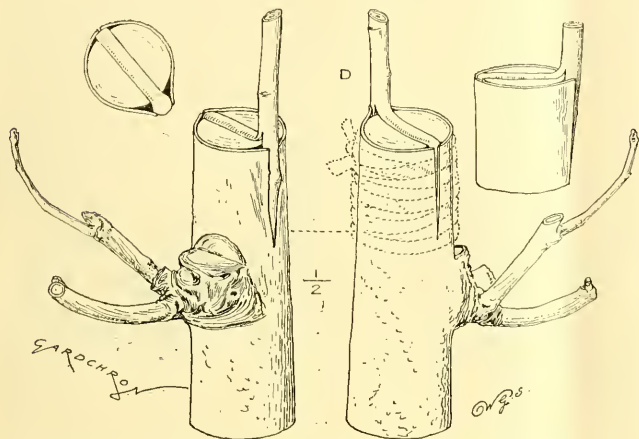


FIG. 60.—LARGE BRANCHES: GRAFTED ACCORDING TO THE METHOD RECOMMENDED, SHOWING THE GRAFT IN POSITION BEFORE IT IS COVERED WITH WAX.

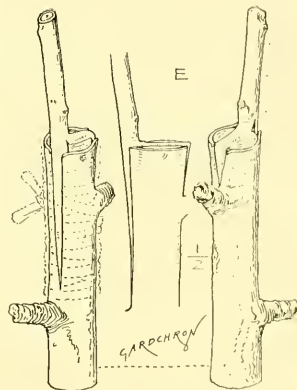


FIG. 61.—SMALL BRANCHES GRAFTED, AND READY FOR WAXING.

would be fatal to the well-being of the plant. It will be found to do well in the East Indian-house, and during the growing season it requires a liberal supply of water. During the dark and dull days of winter a smaller quantity will suffice, although the plants should never be allowed to become dry; great care and circumspection is therefore required in this respect. The atmosphere also should be kept in a moist state, as otherwise thrips will undoubtedly commit ravages which will permanently disfigure the plants. The subject of our illustration flowered in the collection of S. Gratrix, Esq., of West Point, Whalley Range, Manchester, to whom we have much pleasure in dedicating it. The Orchid collection at West Point is confided to the charge of Mr. McLeod, and bids fair to become one of the finest in the kingdom. *Orchid Album*, vol. xi., part 131, pl. 524.

SMITH'S IMPROVED METHOD OF GRAFTING.

This method of grafting is recommended for fruit or other trees, in the orchard and garden, and especially in exposed situations. The scion has a threefold grip of the stock or branch it is placed upon, and this is covered during the first year by the union. The method has been tested in Shropshire and neighbouring

NOTES ON THE NARCISSUS.

(Continued from p. 184.)

KINDS REQUIRING SPECIAL CULTIVATION.—The geographical extent of the Narcissus is sufficiently wide for some few kinds to come from a low elevation in latitudes which indicate their tenderness in England. The autumn-flowering *N. viridiflorus* and *serotinus*, from North Africa and the extreme South of Europe, can be flowered only in a warm greenhouse, and that not easily. The dainty little *N. monophyllus* or white *Corbularia* demands the un-English conditions of dry sun-heat in summer and shelter in winter, and is altogether too frail for our average spring weather. *N. triandrus* and the European *Corbularias*, or *Hoop-petticoats*, though some degrees hardier, and grown with fair success in a few exceptionally favoured English gardens, must be reckoned cold-frame plants. They should be dried off and sun-roasted in their pots or pans from May to September, and freely supplied with water whilst growing. The same treatment suits *N. cyclamineus*, a most difficult subject in most gardens. Tens of thousands of *N. Corbularia*, *triandrus*, and *cyclamineus* are imported annually, almost, it is to be feared, to their extermination in some of their native places abroad, and are advertised and bought as though amenable to ordinary outdoor

The young plants grow healthily enough up to the time of flowering, after which they die out like the imported bulbs.

The larger forms of pseudo Narcissus of the High Pyrenees, *N. variflorus* and *abscessus* (*muticus*), succeed fairly well, but by no means everywhere, under cultivation. To these there is little doubt that our garden bicolor Daffodils, and such vigorous forms as *Emperor*, owe a part, at least, of their parentage, but in their pure form they are fastidious as to soil, like nearly all wild Narcissus, and dislike nitrogenous stimulants. Indeed, the only clear exception to this rule which has come under my notice is the group of yellow trumpet Daffodils, classed as *N. major*. The best known of these, *N. maximus*, is an unmodified wild plant from the Landes, yet thrives in rich kitchen-garden soil. There are, however, difficulties in its cultivation: it is in some years, for no apparent reasons of weather, almost flowerless, and has the perplexing character of keeping its foliage green and unwithered for weeks after all other Narcissus have gone to rest, and thus gives no indication of the proper season for lifting its bulbs. My own experience is that little injury is done by lifting it at the end of June while still green, but that in deep, moist soils it may advantageously be left for some three seasons undisturbed. It is a curious fact that while the garden forms of

N. poeticus, as already noted, will flourish in ground made too rich for other *Narcissi*, yet its wild counterparts, e.g., the Pyrenean and Italian *N. poeticus*, invariably die out in my garden and elsewhere when cultivated, and will live only in grass. The well-known *N. poeticus ornatus*, for instance, will grow almost like a weed in any garden; but a wild plant which closely resembles it, collected by myself in northern Italy, has defeated all my devices to keep it alive elsewhere than in grass. I may here venture an opinion that the suitability of grass-land for some *Narcissi* and other bulbs is not only chemical but mechanical. Certainly, when the turf is broken up (I speak of my own ground), they will not flourish in it as before, though no manure of any kind be added to it. It is not impossible that the turf affords some protection in winter, especially against the alternate freezing and thawing of the surface-soil, which *Narcissi* greatly dislike. It must not be forgotten that many of the wild kinds under discussion are covered, in their homes, by a thick blanket of snow for some months. The drawback to relegating troublesome sorts to the grass is that their flowers are necessarily smaller than when cultivated.

The white garden Trumpets, *N. cernuus*, *albicans*, &c., inherit much of the fastidiousness of the wild *N. uschatus*, from which they are almost certainly descended. Where they fail, as they do over a large part of England, they should be planted in grass; no other kind of treatment by artificial soil or position being permanently beneficial.

The late-flowering double or *Gardenia*-flowered *poeticus*, most valuable for cut bloom in May, requires the very opposite sort of treatment. On poor, and especially on dry ground, a large proportion of its flowers come "blind" or abortive. It should be planted rather deeply, on ground well dug and enriched, and the beds if possible flooded with water if April be dry. This plant, like *N. maximum*, should be moved only every third year, but should be surfaced every February with old stable-manure or a little dissolved bone-manure.

There is an important section of early-flowering and attractive yellow Trumpet *Daffodils* which has proved very vexatious to the market gardener, namely, that of *N. spurium*, including such fine varieties as *Ard Right*, *Henry Irving*, *Golden Spur*, and some others. The popular little *Tenby Daffodil*, one of the first to bloom, presents the same difficulty in most districts. Of these kinds the bulbs become rootless and rusty, and the entire plant dwindles away when grown for a few seasons on the same ground. That very handsome *Daffodil*, *Golden Spur*, tends to die out on the Dutch farms in its second season, and is maintained only by a constant interchange of stocks with the English growers. Fresh stocks, rotation of crops, and annual lifting, are the only availing expedients.

The larger forms of *N. polyanthus*, or *Tazetta*, are of great beauty, and in mild localities, such as the Scilly Islands, of extreme value as being almost winter-flowering. But the finest of them, such as *Bazelman major*, and *orientalis* (*Muzart*), are of southern origin, and liable to destruction in winters of unusual severity. In the average English garden they require deep, rich soil on a south border, and may be left unmoved for two or three years. *G. H. Engleheart*.

(To be continued.)

FORESTRY.

THE MINERAL-FOOD OF CONIFERS.

In the *Gardener's Chronicle* of February 13, Mr. J. J. Willis mentions the researches of Prof. Schultz regarding the proportion of phosphoric acid in different classes of soil for Pines. In 1892, Dr. Ramann of Eberswalde published (*Zeitschrift für Forst und Jagdwesen*, Jan. 1892) the result of some investigations he had made upon the food-supply of the three classes of plantation trees known in sylvicultural language as the "predominant," "dominant," and "suppressed" stems, which constitute the stock of a crowded wood,

Dr. Ramann's researches were confined, however, to the three principal ash-constituents (lime, potash, and phosphoric acid) of the respective stems, and the proportion existing between the weight of needles, and the increase of wood resulting from their assimilative activity, thus furnishing confirmatory evidence on this question.

Dr. Ramann dealt with the Scots Pine growing on the diluvial sand of the North German plains, the selected trees belonging to the "thicket" and "pole" stages, these being twenty and thirty years of age respectively. Three trees out of each stage were taken, one for each of the classes named above. The point Dr. Ramann set himself to unravel was the real cause of the falling-off in growth which occurs in suppressed trees. Two probable causes suggest themselves: 1st, insufficient light; 2nd, insufficient nutriment from the soil. We can only give the more important data from which the doctor arrives at his conclusions, as figures alone occupy several pages. To decide the effect of light upon the increase of stem-volume, the needles from each tree were weighed, and the increase in volume during the previous five years measured. From these data the relation between needle-weight and wood-production is seen to be—

Stem 1—100 grammes produced	... 206 cen.
" 2—100 "	" 178 "
" 3—100 "	" 169 "
" 4—100 "	" 185 "
" 5—100 "	" 170 "
" 6—100 "	" 201 "

or on an average—

Stems 1—3 produced	... 181 cen.
" 4—6 "	" 185 "
" 1—6 "	" 183 "

for each 100 grammes of needles, thus demonstrating that the same quantity (approximately) of dry substance was produced by the same weight of needles, in spite of the different development of individual trees. Dr. Ramann therefore concludes that "the influence of light cannot have caused the condition of the suppressed, and still less that of the dominant trees alone. One must conclude that sufficient light exists in normal Scots Pine plantations for the needles of suppressed trees to assimilate in a degree corresponding to their numbers." The nourishment of the stems with mineral food is then gone into, and the relation between the mineral-food obtained from the soil and the production of wood in the stem compared. The trees belonging to the "pole" stage contained the following percentage of ash:—

	With Needles.	Without Needles.
1. Predominant	... 639 per cent.	549 per cent.
2. Dominant	... 505 "	464 "
3. Suppressed	... 648 "	553 "

Those of the "thicket" stage:—

4. Predominant	... 711 per cent.	612 per cent.
5. Dominant	... 826 "	790 "
6. Suppressed	... 790 "	697 "

From the above figures it appears that no important differences exist in the mineral-food taken up by the various trees (the constituent elements being in proportion to the total ash). The figures also show the difference between the ash of the twenty years old and that of the thirty years old trees, and the stem analyses indicated that the development of the latter up to the twentieth year closely approached that of the former. This facilitates the question being answered, What quantity of mineral-food was taken up by the tree between the twentieth and thirtieth years, and how much organic substance was formed with its aid?

Only the proportion of wood by volume can be considered, as the necessary conditions for estimating its weight were wanting. It is therefore assumed that the ash contents of the thirty years old trees, when these had completed their twentieth year, bore the same proportion to the volume of wood then formed as the total ash bears to the total volume at the thirtieth year. According to this assumption, tables are given showing the quantities of lime, potash, phosphoric acid, and total ash in the three stems of the "pole" wood at the twentieth year, and also the quantities of these substances taken up between the twentieth and thirtieth years, both with

and without needles. According to these tables, the greatest increase or quantity of mineral constituents taken up was in the predominant tree, which doubled its ash during the ten years. The ash of the dominant tree increased by about 30 per cent., while that of the suppressed tree showed an actual reduction in ash-constituents, which is accounted for by loss of needles and branches during the period, proving that the quantity taken up must have been very small. Upon comparing the quantities gained by the first two stems, it is seen that 1 gramme of the different constituents is contained in the following quantities of wood:—

1 gramme of potash,	
in the predominant stem to each	... 2,300 cen.
" dominant	" 1,521 "
" suppressed	" 1,000 "
1 gramme of lime,	
" predominant stem to each	... 877 "
" dominant	" 2,800 "
" suppressed	" 1,000 "
1 gramme of phosphoric acid,	
" predominant stem to each	... 8,110 "
" dominant	" 9,783 "
" suppressed	" 1,000 "
1 gramme of ash,	
" predominant stem to each	... 470 "
" dominant	" 692 "
" suppressed	" 1,000 "

With the exception of potash, the ash-constituents show a considerable falling off in the dominant stem. The fact that potash forms an exception is partly accounted for by the relatively high proportion of this substance in the soil of the district. Lime, on the other hand, is deficient, and the falling off in this substance is very marked.

The conclusions to which Dr. Ramann comes are: 1st, the quantity of needles on a suppressed tree produce, in proportion to their weight, the same quantity of wood as that produced by a tree in full possession of light; 2nd, the diminished growth of single stems is to be attributed in the first place to an insufficient absorption of mineral food.

The cause of these varied degrees of development may lie in the concurrence of vigorous growth, in individual capacity for food absorption, or in favourable or unfavourable influences to which the individual tree was exposed; and in Nature probably all three factors operate, sometimes one, sometimes another prevailing. If the above conclusions are correct, it may modify the theory, but scarcely the practice of thinning, which is always directed towards ensuring the survival of the strongest individuals. If a full supply of light has hitherto been regarded as the cause instead of the effect of the development of the latter, it cannot be regarded as of great practical importance, although of scientific interest. We know from practical experience that all species bear more shade on good than on poor soils, and this partly confirms the above conclusions, although investigations with other species may show different results. *A. C. Forbes*.

NURSERY NOTES.

MESSRS. W. CUTBUSH AND SONS.

For some years past it has been evident that the florists have well-nigh exhausted the capabilities of the *Hyacinth* for further improvement. During this time there has been a considerable number of varieties introduced into our collections, but although the growers have succeeded in creating a wonderful multiplicity of named varieties, and in some instances have added flowers with novel tints, there has been little progress manifested in respect to the size of scape and flower, or in the refinement of them.

In Messrs. Cutbush & Sons' collection, which a few days ago was very fresh and beautiful in the nursery at High Barnet, we found but one novelty included, and this notwithstanding (as Mr. W. Cutbush informed us) that most of the collections on the Continent were visited and examined last spring, with a view to securing any that were of surpassing merit. New ones there were, of course, but they are no better than existing varieties. The new one is named *Isabella*, and is a double flower, white, or in some instances inclined to assume the palest tint. The "hells" are extremely large, and we were disposed to admire it, for considering that the bulbs were young and of moderate size only, they had thrown very commendable spikes indeed. Still, it is

well known that double-flowering Hyacinths are now-a-days less popular than single ones, which are generally more reliable and more showy. The double flowers, nevertheless, are useful to the florist, and especially so in the case of such large "bells" as this new one has. The best of the older sorts were represented among the plants, and some of the best known are so perfect when well cultivated that it is not surprising that they are found difficult to excel. In the whites the more noticeable were *La Grandesse*, *Lady of the Lake*, *Madame Van der Hoop*, *albus maximus*, *Mont Blanc*; and of shaded or tinted varieties there are *Grandeur à Merveille*, *Anna Maria*, *Voltaire*, &c. Several yellow flowering varieties were noticed of the type of *Ida*, *King of Yellows*, *Van Vondel*, &c. Among the blue-flowered ones it is still difficult to select any that are better than *King of the Blues*, *Chas. Dickens*, *Grand Maître*, *Duke of Clarence*, *Czar Peter*, *Lord Derby*, *Queen of the Blues*, *Celestina*, *Lord Byron* and *Regulus*. Of the softer pink or rose-coloured flowers, *La Belle* is a very desirable variety. It usually

and large size. *Proserpine* no doubt remains one of the best of the rosy-carmine varieties; and *Keizerskroon* with its yellow and scarlet flowers, is one of most showy of all; *Joost Van Vondel* is a name that stands for a pure white flower, and for a crimson one with white base. Unfortunately, there are many instances among Hyacinths and Tulips where one name has been given to several varieties.

At *Barnet* one is very strongly reminded of the neglect that at the present day is shown to the beautiful hardy-wooded Cape plants that used to form handsome features in most greenhouses. Messrs. Cutbush were among the last of the growers to give up the culture of these plants, which had been for years one of their specialities. However, as Mr. Cutbush remarked, "a nurseryman must grow what he can sell;" and in a great measure, the houses that were once filled with fine hard-wooded heaths, *Epacris*, *Pimelias*, and such like plants, are now devoted to other purposes. The soft-wooded *Heaths* and many of the *Acacias*, including *A. armata*,

FORCED ASPARAGUS.

I AM aware that little new can be said in regard to the forcing of Asparagus, and the following remarks mostly apply to forcing as carried out in permanent beds — an old plan, I saw advised in these pages many years ago. To force lifted roots is not a profitable business—in deed, many owners of gardens have not sufficient land to grow it, and I do not care to purchase the roots of the nurseryman to furnish a winter supply. It may be urged that a difficulty is found in obtaining *Asparagus* in useful quantity from permanent beds from the month of November. At that early period, however, it is advisable to begin to force *Asparagus* in period-beds in the open, unless flues or hot-water pipes can be used. To force this plant in the manner indicated, the beds must be specially made, and the plants receive special treatment, otherwise the returns in the shape of heads will be poor. My present remarks apply to the

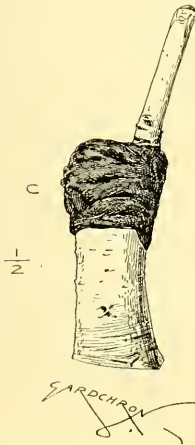


FIG. 62.—A COMPLETED GRAFT: NEW STYLE. (SEE P. 199.)



FIG. 63.—METHOD OF GRAFTING RECOMMENDED: SHOWING THE GRAFT AFTER THE FIRST YEAR'S GROWTH. (SEE P. 199.)

flowers abundantly, producing a good scape of flowers. *Pink Perfection*, *Bella Donna*, and *Rosy Morn*, are also good. *Amy*, *King of the Belgians*, *Lord Macaulay*, *King of the Scarlets*, *Koh-i-nor*, *Princess Louise*, and *Queen of Naples*, are all deeper in colour, and belong to a very showy section.

Turning to the Tulips, the collection at *Barnet* is composed exclusively of known kinds. A number of these were to be seen in good sized batches of plants, with blooms but partially open.

Cottage Maid is a rosy-pink single flower, with a sort of white feather on the exterior of the segments; then there is a curiously flaked variety named *Standard Royal*; the well-known *Pottebakker* can be had with scarlet, yellow, or white flowers. *Thomas Moore* is distinct, being terra cotta colour, mixed upon the exterior with scarlet; it has a fine globular form. *Vermilion Brilliant* is an early one—of very dazzling colour.

Of yellow ones, there are *Chrysolora*, *Canary Bird*, and *Yellow Prince*. The flowers of *Yellow Prince* are fragrant. One of the very best single early-flowering yellow Tulips is *Ophir d'Or*; it has golden-yellow flowers, the segments are long, and the blooms are of pretty form

A. lophantha, *A. Drummondii*, *A. cordata*, and *A. Ricciana*, are still valued in gardens, and the *Boronia* also, such as *B. megastigma*, *B. elatior*, and *B. heterophylla*. All of these were noticed in some quantity.

In one house there were about 3000 young *Roses* of climbing varieties; they had been grafted in warmth since Christmas, and are now making growth. They will presently break again from the base of the present growth, and at the end of the season, plants so treated have usually made strong growths of about 14 feet long. They will be transferred at a later date from the 5-inch pots they are in at present, into others of 8 or 9 inches. *Turner's Crimson Rambler*, the climbing *Teas* and *Noisettes*, and others, are all successfully treated by this method of winter grafting. The *Cinerarias* and *Cyclamens*, especially the latter, will soon have passed, and the propagation of *Dahlia*s and other plants is being effected. Messrs. Cutbush's extremely fine collection of *Carnations*, which includes a large number of plants of the *Malmaison* variety, is at *Higbath*, and the *Palms* and other decorative plants also. At *Barnet* considerable space is devoted to hardy trees and shrubs.

period from January onward till the beds in the open afford supplies; and at this period forcing may be carried out at a small cost in labour and time, and the produce will be but little inferior to that of unforced roots. To supply a few early dishes of *Asparagus*, the roots are lifted and forced indoors, as our permanent beds are not heated by flues or hot-water pipes, and as lifting is not a profitable proceeding. The value to the gardener of permanent beds for what may be termed a full, or at least a good supply, consists in being able to cut heads from the beds three or four times a week at a trifling outlay. For heating I use tree leaves, and in many gardens these can be obtained if diligently raked up as they fall, before they get blown into inaccessible places, and these leaves furnish a quantity of leaf-mould in the course of two years or thereabouts.

At *Sion* there exists a series of *Asparagus* beds measuring 40 to 50 feet in length, and 1 feet in width, raised 2 feet from the level, with alleys of 3 feet in width between them. These alleys are 4 feet deep, and the beds are enclosed with 4½ inches thick brick-walls, pigeon-holed. In November these alleys have the half-decayed leaves cleared out, fresh leaves being

substituted for them; the latter are placed in a large heap to get compacted by fermentation before putting them in the alleys. It is necessary to make several additions, the first filling soon sinking, and each fresh lot is well trodden down and rammed as well, in order to make the whole as compact as possible. The alleys are filled towards the middle of December, the leaves then over-topping the beds a few inches. The fermenting leaves afford a mild, moist heat that does not unduly hasten the growth of the shoots, and these are succulent, and of greater edible length than shoots from hard-fenced roots in hot-beds. The beds must be covered, and formerly I made use of wooden-shutters covered with litter, but shutters are not really needed in mild weather, a thickness of a few inches of litter sufficing to keep the beds warm. In frosty weather the shutters are of much use, and ours are made of boards 15 inches wide, which are laid on the tops of the walls with cross pieces laid on to keep them in place, and bracken or litter, and garden-mats over all. The alleys are always kept quite filled with warm leaves, so that heat is communicated to the space above the soil of the bed. Cutting begins towards the end of the first month, that is about six weeks from the date when the beds are covered over completely, and it finishes when the beds in the open come into bearing. The beds at Sion have been forced for the last twenty years, and their productiveness is still very great, a fact that is due probably to the roots of the plants finding access to the decaying masses of leaves left in the alleys the summer through. The management of the beds after cutting leaves, includes the supply of an abundant quantity of water, the beds having, by their formation, perfect drainage, which have to be flooded with water in very hot weather; first affording the land a good dressing of fish-manure or guano, and occasionally of salt. The soil of the garden being of a very light description needs a great deal of water, but heavy soils would require much less. If the leaves sink excessively in summer time, the beds are mulched with litter, but it is seldom needed if some of the soil is raked from the beds into the alleys when cutting has ceased; at that time a dressing of decayed cow-dung is applied. When Asparagus is forced every year, the roots begin to furnish heads with great regularity. I would advise the use of trees-leaves in preference to stable dung, the heat being milder and more lasting. With fire-heat in any form the beds are liable to get too dry, and the application of water during the forcing is a necessity that cannot be avoided, whereas the use of leaves has no disadvantage unless it is its slowness as compared with other methods. *G. Wythes.*

THE WEEK'S WORK.

THE HARDY FRUIT GARDEN.

By H. W. WARD, Rayleigh, Essex.

Disbudbing Wall-Trees.—Continue to disbud wall and other trees at short intervals of time, as recommended by me in the issue for March 13, and do this till all of the surplus buds have been rubbed off. By removing only a small percentage of the buds from trees at each operation, no check to growth is inflicted. The shape and usefulness of young trees are brought about by careful disbudbing, by pinching the tips of over-girgling shoots and forcing, and by arranging the shoots early in point of time, not wasting the energies of a tree by letting shoots attain a length of 3 or 4 inches before removing them, as is too often the case at this busy season.

Orchard-trees.—An examination should be made of all staked trees, making loose ones firm in the ground and all ties secure, especial care being taken to placing a pad of leather, straw or cloth between the bark and the stake, yet not making the ligature so tight that it will cut into the bark before it will want renewing. The same remarks apply to the securing of the branches of espalier-trees.

Raspberry Canes.—If the operation of tying the canes has been so long delayed, no time should now be lost in getting it done. Allow a distance of 6 inches between the canes in tying them to the wires with bands of raffia, in the case of canes of non-bearing Raspberries, while the young growths to the ground early in February. The young growths resulting from the cutting down of last year's canes will now require to be thinned to 5 or 6 inches from one another in the rows, in order to secure strong canes for fruiting from July onward till cut down by frosts. As the young canes grow they should be tied

to two stout strings twisted round a series of stiffish sticks stuck into the ground at short intervals in the rows.

Protecting Materials.—The various blinds, &c. in use for the protection of the fruit blossom from frost should be let down over the trees when frost is apprehended, not otherwise, as if let down during fairly warm nights, when the thermometer registers several degrees above the freezing-point, aphids is sure to effect a lodgment on the trees.

Vines on Walls.—If these Vines have been treated as recommended in the *Gardeners' Chronicle*, on p. 123, February 20, all the buds excepting one should be rubbed off each spur or eye to which last year's shoots were pruned back, retaining, as a matter of course, the one that is the most promising. This will produce this year's fruit. When the bunches show, leave, so far as can then be judged, the largest-framed and best-formed on each shoot. Later on, when the bunches have set their berries, and the best to constitute the crop can be definitely determined, it will be necessary to make a further reduction in the number of the bunches. In Vine-culture, the size and strength of the Vine, as well as the kind of soil, situation, and climate, have all to be considered.

THE FLOWER GARDEN.

By CHARLES HERRIN, Gardener, Drogheda, Maidenhead.

Rhododendrons and other American Plants.—These plants may be moved with almost perfect safety now or during the next few weeks. Late planting is not advisable, but I have transplanted Rhododendrons from one part of an estate to another until the middle of May. The recent rains will have thoroughly soaked the soil about the roots, and thus the conditions necessary for transplanting now exist. Where the natural soil consists of a heavy clay, or contains much lime, under-plant beds become a necessity. These need not be composed of peat, as both Rhododendrons and Azaleas will grow and flower freely in a compost of sandy loam and leaf-soil; and if peat be not available, sandy loam and half-rotten leaves in equal proportions will prove a good substitute. These plants root chiefly near the surface, and the beds of prepared soil need be but shallow, say, 4 or 5 inches, but the subsoil should be porous, for they require an abundance of moisture, and if this does not drain away quickly the plants do not succeed. Make the plants quite firm in the soil, and then afford a good mulching of leaf-mould, and a thorough soaking of water to settle the soil about the roots. A sheltered site should be selected for hybrids of the Nobleman type, and other early-flowering varieties. If these be partially sheltered by deciduous trees, and screened by evergreen shrubs, they will afford valuable blossoms in most years. Should frost threaten when the plants are about to flower, out any with buds just showing colour, and they will open in a few days if placed in water in a warm room. Hardy Azaleas of the Ghent and pontica sections are excellent companions to Rhododendrons, and require similar treatment. Besides possessing pink, crimson, and yellow flowers in many shades, they are also decidedly sweet-scented. *Ledum latifolium*, *Perpetuas*, *Kalmias*, and *Vacciniums* may also be transplanted now.

Water Lilies.—The introduction of the fine varieties of *Nymphaea* raised by M. Latour-Marliac has caused more attention to be directed to this style of water gardening. They should be planted from the present time throughout April, or until growth commences. The most suitable situation is a lake, or pond, where the water is from 2 to 4 feet deep, with 6 inches or more of mud at the bottom, but I have seen them doing well where there were only 18 inches, or even less of water. The best method of cultivation is to plant the tubers in shallow baskets or tubs held about a moderate depth of soil, and use good fibrous loam, broken moderately fine, and leaf-soil in nearly equal proportions. When planted, tie them down to the basket to prevent the plants being pulled out or disturbed by swans, or other means; and before sinking the basket in the pond, lay a few stones on the surface of the soil. Where the water is shallow, small baskets or large punnets may be used in which to plant the Lily-tubers. The following are good varieties to plant:—*N. Martine*, *Caroline*, *N. M. rosea*, *N. M. albida*, *N. M. chromola*, *N. M. Leykera*, *rosea* (of more slender growth than the other varieties), *N. L. purpurea*, *N. odorata sulphurea*. The common white Water Lily, *N. alba*, is also worth planting, and will grow almost anywhere.

THE KITCHEN GARDEN.

By W. FORB, Gardener, Highclere Castle, Newbury.

Kidney Beans.—Seed may now be sown in quantity either in pots or cutting-boxes, if these are 6 to 8 inches in depth, for the production of pods in the months of May and early June. This sowing will not need to be grown in a hot-house after germination, which should take place in heat of 60° to 65°, but they may be placed in any cold-pit or frame that may be available about the end of next month, advantage being taken to forward growth by closing the lights soon after midday, by allowing the warmth in the frame, with air given, to reach 70°, and by covering the glass at night more or less, according to the outside temperature. As fast as the frames are cleared of the early Potatoes, &c., the soil should be levelled, and Kidney Beans sown. No *Plus Ultra* being one of the best for the purpose, being of dwarf, compact growth, and a heavy cropper. Plants now in bearing should receive copious supplies of weak liquid-manure twice a week, and be syringed daily with clear soft-water. The soil for Beans in pots should be rich, light, and be warmed before being used in potting them. No Kidney Bean should be grown in a fruit-house, if it can be avoided, or remain in any house after a crop is gathered, or red-spider will soon spread from the plants to others in the house.

Peas under Glass, &c.—Peas which are being forwarded under glass should be afforded weak liquid manure occasionally, and ventilated freely in the warm part of the day; closing the lights in good time, and if standing in frames covering the lights on cold nights. Plants being forwarded under glass for planting outside should be planted without further delay, or they will be no earlier than the first outdoor sowings. If the land be heavy, leaf-soil should be worked in round about the roots in planting them. As soon as planted, dust the plants with fresh soot, and put the sticks to them. The early sowings now coming up must be protected from the ravages of birds and mice. Against the birds use black thread stretched in intercrossed lines just above the soil, and for the latter use traps; and let the rows be moulded-up when the plants are a few inches high. When sowing the main-crop Peas, it is advisable to wet the seeds and roll them in red lead powder.

Seakale.—Seakale may at this season be easily blancheted where it grows, by placing sifted coal-ashes over the crowns about 9 inches or 1 foot deep, so as to shut out the light. Shoots obtained in this manner are of excellent quality.

Vegetable Marrows.—If Vegetable Marrows are to be forced under glass, seed should be sown forthwith on a mild hot-bed, and preferably where the plants are to grow and fruit. When up, allow the plants all the light possible; afford air freely from the first on all favourable occasions, taking care, however, to protect the plants from cold winds at all times, shutting up the frames early in the afternoon, and covering them securely at night for the present.

PLANTS UNDER GLASS.

By G. H. MAYCOCK, Gardener, Luton Ho Park, Luton.

Bovarias.—The young plants that were struck from cuttings taken from selected old plants which were dried off in October, and then pruned back so as to furnish suitable shoots for the purpose in the winter, will now, if they are kept fairly moist, move freely. It will be necessary to nip the points of the shoots to induce bushiness; and to keep the plants in active growth, a warmth of 65° to 70° by night, and 10° more by day, should be maintained, affording them a slight amount of shade during the hottest hours of the day. Slips with a heel, and small pieces of the roots, will strike at the present season when placed in bottom-heat of 76° to 80°; but late autumn or winter-struck plants give the better results, and make finer plants in the shortest period of time.

Cyclamens from Seed, if picked off into pans, will probably now require to be potted into thumb-pots, taking care in doing so to place the oorn to only half its depth in the soil. Place the potted seedlings on a bed or solid stage (not shelves) near the glass, in a moist warm-house or pit.

The Tuberosa (Polyanthes tuberosa).—Some of the best should now be potted in a mixture of three parts partially-decayed turfy loam and one of leaf-mould, with a small amount of sharp sand. I prefer to pot the bulbs in the draining-pots at the first, which need not be bigger than large 4s. If any of the bulbs exhibit signs of decay, the affected parts should be cut clean away, and the bulbs stowed

with or rolled in charcoal powder and lime. In potting, the bulbs should be buried to one-half their depth, and firmly potted. One bulb in a pot is enough; and the soil should neither be too wet or too dry. Plunge the pots in a bed of coal-ashes, with a cold frame over it, introducing them to the forcing-house as may be required. The forcing must be very gradual, no water should be afforded before the flower-spike pushes up, unless the soil should get very dry, but afterwards water when necessary, as with other plants, affording liquid-manure if the spikes appear weakly, and syringing frequently in order to prevent infestation of the leaves by red-spider. By following out this course, a continuous supply of flowers can be obtained from the month of August until the end of the year.

Agathae ocellatis.—A good stock of cuttings of this plant may now be struck in a cool-house under a hand-light or bell-glass, the rooted cuttings being potted without delay. It is a plant that flowers best when the roots are somewhat pot-bound. The planting soil should be chiefly composed of loam and 45s are sufficiently large pots to flower them in. Grow them in a cold frame during the summer, removing them in the autumn to a house with a temperature of 50° by night and 55° by day. The plants will require stopping once or twice in the early stages, but beyond keeping green-fly in check, it is an easily cultivated subject. For supplying a profusion of blue flowers during the autumn and winter months, when blue flowers are scarce, this *Agathae* should not be neglected.

General Remarks.—See that Marguerites do not get over-run with the maggot, as any of the grubs that are found to be mining in the leaves should be nipped with the thumb-nail. Sow seed of Mignonette in pots in loam which has been stacked for not less time than nine months. Plants of *Reinwärtia* (*Litum*) *trigynum* and *Libonia floribunda* which have flowered should now have their shoots cut in severely, and be placed in such a position that strong, healthy growth be made. Cuttings may be taken when the shoots have grown to a few inches in length.

THE ORCHID HOUSES.

By W. H. WHITE, ORCHID GROWER, BURFORD, DORSET.

Deciduous Calanthes.—The species and hybrids of this genus are exceedingly beautiful, and useful for decorative purposes. Unfortunately, near large towns there are usually fogs prevalent at the season when the plants commence to bloom, which sometimes destroy the inflorescence. To commence the cultivation of these *Calanthes*, the following hybrids would form a useful and pleasing collection:—*C. Veitchi*, *C. V. alta*, *C. Seideni*, *C. Bella*, *C. Harrisii*, *C. Halli*, *C. Victoria Regina*, *C. Burfordiense*, *C. Bryan*, *C. William Murray*, *C. versicolor*, *C. purpurea*; and the varieties of *C. vestita*, as *C. Turneri*, *C. T. nivalis*, *C. rubro-oculata*, and *C. luteo-oculata*. *Calanthe* (*Limatodes*) *rosea* is a distinct and charming species, and grows strongly. Deciduous *Calanthes* should be potted before new roots are made. Shake out the exhausted soil, and shorten the roots to about 1 inch. The part left is necessary to keep the pseudo-bulbs firm until they are established. The soil should consist of one-half tuff yellow loam, one-fourth dry cow-dung, or well-decayed leaf-soil, and one-fourth finely-chopped sphagnum-moss, small crocks, and coarse silver-sand. Half-fill the pots with drainage, and over this place a thin layer of loamy turf, with the grassy-side downwards. When potting, shake the soil down moderately, and firmly around the base of the pseudo-bulbs to within half an inch of the rim of the pot, this will leave sufficient space for a top-dressing of fibrous loam when the plants are in active growth. The usual practice is to plant the pseudo-bulbs singly, but where house-room is limited, several may advantageously be planted together in pots of a suitable size. The plants require the lightest and best position in the East Indian-house, or they may be successfully cultivated in the plant-stove, Pine-pit, or Cucumbers-house. Give no water at the root until the plants have been potted two or three weeks, but merely syringe between the pots several times a day, according to the state of the weather. When the new growths have begun to grow freely, slightly sprinkle the soil with water by means of a fine rose watering-can, but even then the beginner must use much discretion; for if the soil be made too wet by dipping or watering, the tips of the young roots decay, and the health of the plant becomes impaired. When the roots have a firm hold of the sides of the pot, water may be given less hesitatingly, and when thoroughly well established an abundance of water should be alternated with weak liquid cow-manure.

The stock of any particular variety may be increased by taking off the old back bulbs previous to their potting, and inserting them close together in pots or shallow pans filled with sphagnum-moss, but affording no water. Place them in a light position, and when the bulbs commence to grow, re-pot them singly, as previously advised. Seedlings from last spring may be potted off now. The best method is to place several around the edge of the smallest-sized pots, and suspend them from the roof of the house. They will require the same kind of treatment as the older plants. Any of the latter that are bearing seed-capules should not now be disturbed by repotting; but be placed in full sunshine to mature and ripen the seed. Immediately the podburst, carefully wrap a piece of tissue-paper around them to prevent loss of seed, and when the old stems commence to die down, cut them off. By that time the plants we are now potting will have made many roots, and upon those which have the greatest number of roots the seed should be sown. It usually germinates in five or six months, and until this takes place those plants must be carefully watered. When the seedlings are up, and have made more roots, they should be kept moist, but they must not be disturbed before next spring. *Calanthe Regnierii*, and its varieties *Sanderiana*, *Willamsii*, and *Stevensii* will now be in bloom; in these also will require repotting after the spikes are cut and growth has recommenced. This section of the *Calanthes* is more serviceable to those who, for reasons stated above, fail to grow the early winter-flowering varieties satisfactorily.

Epiplophrynus and *E. congensis* have started to grow, and may be repotted. Give them the same treatment as the *Calanthes* in regard to potting, watering, and resting, but when growing they should have rather more shade.

THE APIARY.

By EXPERT.

Weather and the Bees.—While not exceptionally unseasonable, the weather keeps dull and cloudy, cold winds confining bees within doors, except on the odd days when sunshine warms them into activity and eagerness to get a fly abroad. One can easily understand the great amount of good done to a full colony of bees when a real "flying day" occurs for the first time in spring after several months of inactivity. Essentially an outdoor worker, the open air and sunshine is life to the bee in far more senses than to the majority of insects. Nor does anything afford more genuine enjoyment to the true bee-man than to see the "turn-out" of strong stocks when they do get their first real flying day in spring, and show him that they have not forgotten how to scent pollen, and bring it home.

Contracting the Hives.—Although we advise no stimulating this month, the weather may be quite warm enough towards its close to warrant a full examination of the brood-nest, and a consequent crowding of the bees on fewer combs for the sake of warmth. Empty space below the combs may now be dispensed with.

Uniting Queenless Bees.—Where stocks are ascertained beyond doubt to be queenless, the bees should be added to the next stock as follows: Bring the two hives as close together as they can conveniently be placed by gradually lessening the distance between them a yard or so daily. Smoke the bees slightly, and sprinkle both lots with thin syrup, then remove an outside frame from the hive with is to receive the queenless bees, and substitute one from the last-named with the adhering bees in its stead; pour a little syrup in between the combs, and give more smoke as the frames are placed together, and proceed as before till the bees of both stocks are joined together in one hive. Examine carefully to see that no frames containing brood or eggs are removed from the hive where the queen is. If the space has been properly contracted by division boards, the removal of these give the required room for added frames.

Stimulating.—This is often started nearly a month too early, and much mischief has been caused thereby. When the bees are well off for food, they do best left alone until plenty of natural pollen can be had. Of course the resources of the neighbourhood will be taken into account; but where a natural supply exists, we do not like to forestall that supply by artificial means, it is wisest to let nature and the season guide us. Stimulating is useful enough if judiciously begun and carefully continued, but it has been misunderstood and terribly abused in times past, principally, as we think, by beginning too early, and in some cases by carelessness and neglect afterwards. Many also imagine that syrup alone will cause queens

to commence egg laying—this is a mistake; unless pollen be already in the hive, or is obtainable in other ways, stimulating is only half accomplished, and no start is made. Whenever brood is being raised, pollen will invariably be seen in the cells of the opposite comb ready for the nurse-bees' use, we thus know for certain that the larvae require nitrogenous food as well as honey; and in localities where pollen is scarce, it becomes necessary to fall back upon such substitutes as we know of. The time to begin stimulating must be regulated by two things—first, the earliness of the district in which bees are kept; and second, by the season. In plain words, when bees are carrying in pollen freely, supplement this by giving syrup slowly and regularly (not by fits and starts), or by uncaping sealed food at intervals of a few days, but do not expose brood or uncovee hives oftener than is absolutely necessary. It must not be supposed that stocks which are working vigorously may be left to take care of themselves henceforward, their very prosperity now may be the cause of disaster later on, if the rapidly increasing population should exhaust the stock of food in store, and the bee-keeper does not take care of the "cupboard" by guarding against famine.

FRUITS UNDER GLASS.

By F. HARRIS, GARDENER, EASTON CASTLE, LODBURGH.

Cucumbers.—Those recently planted now making rapid progress should have the lateral shoots constantly nipped at the points, and the main shoots, as well as the longer laterals, evenly distributed without crowding them, and be tied loosely to the trellis, supporting the plants as they grow in hoops. In ordinary cases and frames the same kind of treatment is required, but instead of tying the bine, it must be kept in place by means of wooden hooks, or bits of brick or stone. The laterals should be stopped one leaf in advance of a fruit. Top-dress with fibrous loam, old mortar, some fresh horse-droppings, and one handful of soot per bushel of soil, affording a temperature of 85°. Plants in bearing should occasionally be afforded liquid-manure. Do not preserve old plants whose best time is over, but clear them out, whitewash the pit, and clean the glass, put in new hillocks of soil, and start with vigorous young plants. If old, and they must be retained for a short time, thin out the old leaves, taking in preference all of those which are mildewed, or infested with thrips or red-spider, syringing those that are left with soap-suds and flowers-of-sulphur; top-dress the bed, and apply manure-water. New growth will soon push in sufficient quantity to cover the trellis anew, and furnish Cucumbers till the young plants come into bearing. Sow Cucumbers-seeds occasionally.

Strawberries.—Plants which have fruited, if required for planting out, should be placed in a cold-frame, and gradually inured to the outside air; when planted out on a warm border good fruits are obtained from such plants late in the autumn. When removing them from the forcing-house, see that the soil is thoroughly moistened. Strawberry plants carrying ripe fruit should be afforded air freely, and if the fruit is not wanted for a few days, remove the plants to a cool, dry house, and shade from strong sunshine. The fruit will not keep for a longer period than one week. Successional plants must be kept gently moving, affording weak stimulants to those growing in small pots, which have set twelve to eighteen fruits each. When thinning the fruits on late successions, remove more than is the rule with the earlier batches. As soon as thinning is finished, pinch under the fruits to prevent the stalks from bending over.

Tomatoes.—Those plants which are carrying fruit now swelling fast should be afforded liquid-manure once or twice a week, but plants that have not set much fruit will be the better for being kept rather dry at the root, and not stimulated with manure. When Tomatoes are planted in large pots, or their roots have the run of a large mass of soil, the growth is very strong, and as a consequence they set badly; but if the plants are firmly potted in smallish pots and kept a little dryer, this tendency is overcome. The lateral shoots should be pinched out, and the tips of the leaves removed if very luxuriant. Afford the plants more air as the sun-heat increases, which will have the effect of facilitating fruit-setting. Successional plants should be removed before the roots get pot-bound, giving two or more shifts till they come into their fruiting-pot. I prepare the plants by getting them into their fruiting sizes as fast as may be, standing them in light places in vineries and other forcing-houses. See that the plants for outdoor fruiting are potted, staked, and kept in good condition, and not starved in small pots.

EDITORIAL NOTICES.

ADVERTISEMENTS should be sent to the PUBLISHER.

Local News.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

Newspapers.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

APPOINTMENTS FOR THE ENSUING WEEK.

SATURDAY, MAR. 27	Royal Botanic Soc. Meet.
WEDNESDAY, MAR. 31	Royal Bot. Soc., Spring Exhibition.
THURSDAY, APRIL 1	Linnean Society. Royal Hort. Soc. of Ireland; Spring Show.
SALES.	
MONDAY, MAR. 29	Tuberose, Cannas, Carnations, Begonias, &c., at Protheroe & Morris' Rooms.
TUESDAY, MAR. 30	Asters, Anemones, Tigridias, & Roses, Imported and Established Orchids, &c., at Protheroe & Morris' Rooms. Border Plants, Roses, Shrubs, Bulbs, Lilies, at Stevens' Rooms. Japanese Lilies, Carnations, Azaleas, Roses, Herbaceous Plants, &c., at Protheroe & Morris' Rooms.
WEDNESDAY, MAR. 31	Great Sale of Roses, Palms, Lilies, Trees, Ornamental Shrubs, Fruit, &c., at Stevens' Rooms.
THURSDAY, APRIL 1	Special Sale of Border Plants, Lilies, Bulbs, Roses, &c., at Stevens' Rooms.
FRIDAY, APRIL 2	Imported and Established Orchids, at Protheroe & Morris' Rooms.

AVERAGE TEMPERATURE for the ensuing week, deduced from Observations of Forty-three years, at Chiswick.—45°-39°.

ACTUAL TEMPERATURES:—

LONDON.—March 24: Max., 62°; Min., 49°.
PROVINCES.—March 24: Max., 55°, Yarmouth; Min., 44°, Sumburgh Head.

TESTIMONIALS are now often such matters of course, got up for every conceivable purpose, with little or no discrimination, that many of them are looked on by subscribing victims as a species of blackmail, and the whole system is apt to inspire loathing. Of course, we are alluding to some and not all public testimonials. For some there is ample justification; while in the case of those which are kept private we have, of course, no right to raise any objection at all.

In the case of our late friend Dr. HOGG, it may be known to some of our readers that an attempt was made, shortly before his death, to collect together in a handsome Album a series of portraits of his old associates and colleagues. About a hundred portraits were thus received (comprising most of the representative men), and the number might doubtless have been much increased, but for the system of selection adopted. Unfortunately, the delays in the preparation of the Album were such, that the finished volume only appeared on our table shortly after the decease of the great pomologist. The secret was well kept till nearly the end, when, foreseeing the probable issue of the case, the nature of the proposed gift was made known to the intended recipient. There is at least reason to believe that some of our friend's last anxious hours were rendered pleasant by the intelligence conveyed to him.

It is impossible not to feel sorry at the partial frustration of a plan which excited universal sympathy, but we could not have done otherwise under the circumstances. For the future, we have the satisfaction of knowing that the Album now becomes the property of Mr. R.

MILLIGAN HOGG, the only son and the present editor of the *Journal of Horticulture*. To him it will come as a pious souvenir of the past, and a great encouragement for the future.

And now we make way for another old friend, whose proposal we doubt not will be warmly received:—

"Grand as the exhibitions of fruit often are at the present time, the Royal Horticultural Society has no special medal to offer as the highest award for fruit. It has its Flora, its Banksian, Veitch, &c., but no special fruit medal. May I, therefore, suggest this. Is there not now unusual and highly fitting opportunity to have such medal, and let it be in the honour of the one whom to know was to love, and to associate with was indeed a privilege.

"Let, then, a subscription list be opened that we, by giving, may thus testify our regard and high estimation and deep sense of our appreciation of the valuable contributions to all that appertains to the better understanding of our fruits, our fruit trees, and their varieties. Let the fund thus raised be to found a medal or medals to be annually awarded or otherwise for fruit excellence in exhibition only, and that such medal be entitled 'The Robert Hogg Fruit Medal.' If this can be done, as indeed it should, I for one shall be most willing to give my mite, though but a poor token of a life-long admiration of the man and his work. *Harrison Weir, Sceneoaks.*"

Our readers will find on p. 210 in the report of the Royal Horticultural Society's meeting of Tuesday last, an eulogistic estimate of the late R. HOGG, addressed by the Rev. W. WILKS to the assembled members of the Fruit Committee.

WE have already alluded to the successful results consequent on a Commission of inquiry, of which Prof. SARGENT was a member. We have now before us the full text of the letter of the Secretary of the Interior to the President (CLEVELAND), transmitting a report by the National Forestry Commission to the National Academy of Sciences, recommending the establishment of additional forest reservations. We have not space to enter into detail, but we may say that in addition to previous reserves, the President has now sanctioned the reserve of no fewer than 21,379,840 acres, mostly in the Central and Western States. Thus the conservation of forests of untold value, till now in danger of extirpation, has been secured, to the enormous advantage of the country, economically and climatically:—

"The total area of the reservations hereby proposed," says the secretary, "exceeds that of all those heretofore established by about 4,000,000 acres, but as our public forests are being rapidly denuded, and the loss resulting therefrom is incalculable, I do not think this apparently large area should militate in any degree against the recommendation of the commission.

"I respectfully suggest that the one hundred and sixty-fifth anniversary (February 22, 1897) of the birth of the father of our country could be no more appropriately commemorated than by the promulgation by yourself of proclamations establishing these grand forest reservations."

Of each of the thirteen Reserves a short account is given, from which we take the following by way of illustration:—

"3. The Teton Forest Reserve.

"This proposed reserve embraces 829,440 acres, and is south of and adjacent to the Yellowstone Park Timber Land Reserve. The forests which cover it are similar in character to those in the Yellowstone National Park; they are capable of supplying all local demands that will probably ever be made on them, but have little commercial value. This proposed reserve contains the Teton Range of mountains

and Jackson Lake, and some of the grandest and most picturesque scenery of the Rocky Mountains. Within its borders are many streams flowing west, south, and north, and as a reservoir of moisture it is important. Incidentally, it may be mentioned that the proposed reserve is a favourite home of the elk and other large game, and that as a game reserve it would well supplement the Yellowstone National Park and the Yellowstone Park Timber Land Reserve.

"9. The Olympic Forest Reserve.

"This proposed reserve occupies the high and broken Olympic Mountain region in north-western Washington, and contains an estimated area of 2,188,800 acres. This is a region of steep and jagged mountains, their highest peaks clothed with glaciers and with perpetual snow. The forests here, watered by more copious rains than fall on any other part of the United States, are composed of enormous Spruces, Firs, and Cedars, and in productiveness are surpassed in the world only by the Red-wood forests of the Californian coast region. Few explorers have penetrated far into this region, which from the denseness of its forest-covering, offers exceptional difficulties to travel; and there is no record that it has been crossed in a north to south direction. This proposed reserve, no doubt, contains for its area the largest and most valuable body of timber belonging to the nation; and here is probably the only part of the United States where the forest, unannihilated by fire or the axe, still exists over a great area in its primeval splendour.

"The character of its forests, which can be made to yield permanently vast quantities of timber, its wildness, the picturesque quality of its surface, and its remoteness, make the proposed Olympic reserve one of the most valuable of all the forest reserves which have been made or proposed."

"The commission is now engaged in perfecting a scheme of forest management which it believes will make the administration of the reserves possible, and which in due time will be submitted to you. It believes that the solution of this difficult problem will, however, be made easier if reserved areas are now increased, as the greater the number of people interested in drawing supplies from the reserved territory, or in mining in them, the greater will be the pressure on Congress to enact laws permitting their proper administration. For this reason it is the unanimous opinion of the commission that the establishment, by proclamation, of the reserves described above is now a matter of the utmost importance to the development and welfare of the whole country."

The attainment of this end has been one of the main objects of PROFESSOR SARGENT'S labours for many years. He may be congratulated on his success, for greater service to his country it would be difficult to render.

TREE FERNS AT MENABILITY.—This well-known Cornish garden, belonging to JOHN RASHLEIGH, Esq., has frequently furnished materials illustrating the successful cultivation of plants coming from warmer regions than our own, especially those of New Zealand, South Australia, and Japan. Our illustration (fig. 64), taken from a photograph by Mr. RASHLEIGH himself, represents a group of *Troca Ferns* growing in a sheltered spot in the pleasure grounds at Menability. The largest, 8 feet high, came from Kew about five years ago, at which time its weight was 14 cwt., and height of stem 8 feet. The seven others came from Sydney rather more than two years ago, and they are 8 feet high. These plants, Mr. RASHLEIGH tells us, are kept in good condition by daily syringing the trunks in dry weather. In rainy or dull weather they take care of themselves.

LINNEAN SOCIETY.—On the occasion of the meeting on Thursday, April 1, 1897, at 8 P.M., papers will be read:—I. "On the Evolution of Oxygen from Coloured Bacteria," by A. J. EWART, B.Sc., Ph.D. II. "On the Germination of Spores of Agaricoreæ," by Miss HELEN BRATTON POTTER.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.—We understand that the net proceeds from the performance of the comedy-opera "Dorothy," recently given in aid of the Victorian Era Fund, amounted to £60 2s. 3d., and a cheque for that sum has been forwarded to the Secretary of the Institution by Mr. H. MORGAN VEITCH.

THE HAMBURG EXHIBITION.—One of the attractions will be a work by M. SCHURWEGE, for which a special position will be chosen, and which will take the form of a series of representations by means of plants and paintings of the various floras of the globe.

of £150 in one series, exclusive of gold and silver medals, are open to gardeners and amateurs only. Other liberal prizes are offered to the trade.

CAPE FRUIT.—The Union Company's steamer, *Tartar*, has arrived from the Cape of Good Hope with the following consignment of fruit, viz.:—To Mr. G. E. HUDSON, 289 cases of Grapes; 150 do., to Mr. NATHAN; 34 cases of Grapes and 12 of Pears to Messrs. WOODHEAD, PLANT & Co.; and 100 cases of Grapes to the Colonial Consignment and Distributing Co. (Ld.); and most of the fruit turned out in excellent condition.

RELIQUIE MUELLERIANÆ.—It seems that Mr. J. G. LUEHMANN, who rendered so much valuable service to the Baron, has taken upon himself to continue the publication of leaflets descriptive of new plants, in the same way as that carried on by the indefatigable VON MUELLER.

MR. HENRY STEVENS AS A PHOTOGRAPHER.—The proprietors of the *Graphic* have recently conducted an amateur photographic competition. Exhibits from all parts of the world have been received, and the competitors, it is said, numbered several thousands each of them being permitted to send six



FIG. 64.—TREE FERNS AT MENABLY, CORNWALL. (SEE P. 204.)

Thus, a moor, a Norwegian fiord, with alpine (Scandinavian) plants, and a Mexican view, with gigantic Cacti, are already completed, and other scenes are in preparation.

COMING EVENTS CASTING THEIR SHADOWS BEFORE.—One of the greatest of these promises to be that of the Edinburgh Chrysanthemum Society's show. It has already launched its Diamond Jubilee Schedule for November 18, 19, and 20, and offers prizes as follows:—1st, of £50 and a Gold Victorian Medal; 2nd, of £30 and a Silver Medal; 3rd, of £15; 4th, of £10; 5th, of £8; 6th, of £4. For twenty vases of twenty varieties of three blooms each, Chrysanthemum foliage only to be used, these special Diamond Jubilee prizes amounting to a sum

THE RECENT GALE.—It has been ascertained (remarks the *Daily Chronicle* of the 16th inst.) that during the recent gales on the south coast immense damage was done to the timber on the neighbouring estates of the Duke of Norfolk and the Duke of Richmond. It is estimated that the former lost quite 1000 trees, involving a great expense for clearing; whilst the Goodwood demesne suffered to a not less extent. The Duke of Richmond was specially grieved at the uprooting of eleven of his fine Cedars of Lebanon, part of the remnant of the 100 of those trees planted in and around Goodwood Park by CHARLES, the third duke, in 1760. There is to be an extensive planting of Cedars in the park and pleasure-grounds in commemoration of the Diamond Jubilee year.

photographs. The result has just been made known, and horticulturists will be interested to note that the first prize of £20 has been awarded to Mr. H. STEVENS, the well-known auctioneer. His photograph was entitled "Worn Out," and represents an aged woman in a worn-out donkey-cart. Mr. STEVENS is a frequent exhibitor of photographs, for which he has won many medals, but his latest success he is most proud of.

THE PENETRATION OF FROST INTO THE GROUND.—According to the researches of a French savant into the subject of earth-penetration by frost, it makes a difference whether the earth be bare or covered with turf; in the former case, the penetration of the frost is much easier, quicker,

and deeper than in the latter, the layer of turf making an average difference of 50 centimetres in the amount of penetration. During the hardest frosts of 1896 it was observed that the frost penetrated the bare earth to a depth of 75 cm., whilst under turf the depth was about 30 cm. In the case of the former the frost in the first two or three days reached to a depth of 18 cm., whereas in earth covered with turf nineteen days of an average amount of frost of -1° Rean. (9° Fahr.) were required to show a trace of penetration at 5 cm. The continuous penetration of frost by night, and of sunheat by day, was likewise closely observed. It would be interesting to ascertain, in view of these statements, whether the protective layer of turf above the root of trees and shrubs retards or hastens growth.

WOOLTON GARDENERS' SOCIETY.—The last meeting of the session was held on the 18th inst., the Rev. GEORGE BEAUMONT presiding. There was an exhibition of plants and flowers, together with social amusements. Several groups of plants of a high character were staged. The attendance was most satisfactory, and a balance of £3 is to be given to the Victorian Era Fund.

THE CULTURE OF VEGETABLES.—MR. E. KEMP TOOGOOD of Southampton has published a small pamphlet on this subject. It is intended for practical gardeners, and for them will be of much value; but we suggest to the reader that the preface be skipped, and that attention be paid simply to the practical directions, which are excellent.

HOOKE'S "ICONES PLANTARUM."—The February part (constituting the last part of the twenty-sixth volume), contains numerous descriptions and illustrations of plants of botanic interest contained in the Kew herbarium. A large series of species of *Eryngium* is figured and described by Mr. W. B. HEMSLEY. *Echinops bromeliifolius*, with linear leaves closely beset with spines at the margin, and furnished with cylindrical racemes of flowers, is a very extraordinary plant found in East Tropical Africa by Mr. SCOTT ELLIOT.

THE DOUGLAS FIR.—In the February number of the *Erythica*, Mr. J. G. LEMMON has revived an old name of *KALINESQUE'S*, namely, *Abies mucronata*. The name was given in 1832, but was never taken up, and as the plant is not an *Abies*, it would have been better to have consigned it to oblivion. Mr. LEMMON, however, thinks otherwise, and calls the tree *Pseudo-tsuga mucronata*, Sudworth. Mr. SUDWORTH having, as we suppose, had nothing whatever to do either with the genus or the species! The result is a list of nine synonyms, the latest dating from 1895, besides others from European literature which are passed over. The gardener who speaks of the 'Douglas Fir' is much happier!

APPLE CULTURE AND CIDER-MAKING.—With a view of obtaining accurate information, some of our Kentish friends are proposing to map out the fruit-growing portions of the county, parish by parish, and to report on the condition of the orchards. Prof. HALL, of Wye Agricultural College, is grafting his stocks with cider sorts from the West, and is arranging the holding of a cider conference in May. Cider-making involves considerable extra outlay, and is, except in two or three favoured localities, still in the experimental stage. Still, we can see no reason why, if made on scientific principles, and not "anyhow," it should not become remunerative, and a great boon to those consumers to whom malt liquor is objectionable. There is also no reason why the more modern bush culture of select Apples, cultivated and marketed on business principles, should not be combined with cider-making.

PLEASANT FOR THE BRITISH FARMER!—The steambot called the *Ruby* has been lately put on the service between Antwerp and London, and is to be followed by the *Topaz* and the *Sapphire*. Any package of poultry, fruit, eggs, vegetables, &c., consigned to a Belgian station before 8 A.M. is delivered the next morning in the London markets at 5 A.M.

THE BRITISH MOSS-FLORA.—By R. BRATHWAITE, M.D., &c. The November part (xvii.) of this valuable publication treats of Fam. xix., Hypnaceae i. Having on previous occasions called attention to the excellence of this work, it only remains to add that the quality of the letterpress and the accuracy of the illustrations are quite up to the usual standard.

POISON IN SPINACH.—Under the name of atropioides, or intoxication to Spinach (*Atriplex*), M. MATIGNON, physician to the French Legation at Peking, describes the ill effects which he has frequently observed among Chinese of the poorest class, particularly among beggars, and especially among the women. These ill effects are consequent upon the ingestion of young shoots of a certain variety of *Atriplex*, and are characterised by general swelling of the face, hands, and forearms, by sensitiveness, difficulties of movement, and circulation; and, particularly, by cutaneous disturbances, often complicated by ulcers more or less spreading over the swollen parts. M. LAVERAN has remarked upon this theory that, if these ill effects are attributable to feeding on the young shoots of a variety of Spinach, there is but a small number affected of those who eat it. The Chinese doctors think that it arises from irritation produced by a poison secreted by small greenish-yellow mites often found on Spinach. M. MATIGNON agrees with this opinion, which seems confirmed by the fact that ill effects are not felt when the Spinach shoots are carefully washed, or only eaten when cooked. Other hypotheses are admissible. It is possible, for instance, that these local troubles are produced directly by the mites. M. LAVERAN was impressed to see, in reading M. MATIGNON'S work, that only exposed surfaces are affected, that the right hand is more often injured than the left, and that the eruption is sometimes confined to the thumb and index finger of the right hand; that is to say, to the parts most exposed when gathering Spinach. It is comprehensible that fingers soiled with an irritant substance would easily infect the face, or that the mites would be sprinkled on the face, as on the hands and forearms. No gastric symptom is observable, the appetite is maintained throughout the course of the illness; this does not favour the idea of poison from any ingested matter. The mite mentioned as frequent upon Spinach shoots is perhaps one of those common in tropical America, which live in vegetation, and give rise, in human beings, whom they voluntarily attack, to intolerable itching, such as in our country is caused by the harvest-mite, a larval form of a mite of the Trombidium genus. The question should be studied from an etiological point of view, and the result of these complementary researches collated before the evil can be named; the title atropioides should apparently be discarded, as it is not the *Atriplex* which causes the mischief. *Revue Scientifique*.

DANEMARK.

ORCHID EXHIBITION AT COPENHAGEN.—A committee of Danish ladies arranged this month at Copenhagen a very interesting flower-show, partly consisting of Orchids brought home from London by the nurseryman and Orchid grower, Mr. O. Trier, at Copenhagen. Other Danish exhibitors sent a great many different species of Orchids in flower. Illustrations were furnished of Danish Orchid literature; also splendid paintings of the thirty-three species of Orchids indigenous to the country, and some of exotic species. The plants were nicely arranged in fine Danish ceramic ware, and the ladies had shown much taste and labour, having presented it all in a really delightful manner. The exhibition was visited by the entire Royal family, and had many admirers. The aim of this undertaking was to obtain funds for the Woman's Building at Copenhagen. At Chicago the Danish ladies exhibited very beautiful and useful objects.

The success attending this exhibition encouraged them to hold a grand exhibition during the whole of the summer of 1895 of objects entirely made by

women, which was also a successful undertaking, bringing in considerable financial gains.

The third successful and novel venture was the aforesaid Orchid Show, which affords a splendid example to ladies in other countries. II.

A GIGANTIC CYCLAMEN.

VERY much has been said and written of late about Cyclamens, and various modifications of existing types have been observed, that are likely hereafter to result in much greater variety in regard to the shape and form of the flowers. At the same time, there has been continued advance made in perfecting the well-known type, by obtaining increased size of flower with more substance, greater variety of colour, and better habit. In fig. 65 is presented a bloom taken from one of a few plants exhibited at the Drill Hall on the 9th inst., by the St. George's Nursery Company, Hanwell, when the strain obtained an Award of Merit. The segments of the flower were a trifle under 3 inches in length, of good substance, and the stems unusually stout. They were the finest Cyclamens we have seen.

THE INFLUENCE OF THE GRAFT ON THE FRUIT.

At whatever age in the history of horticulture the utility of the graft may first have been recognised, there is no doubt that a vast amount of information on the subject has gradually accumulated during an indefinitely long period of observation, and subsequently of methodical investigation. Extensive and important as the actual knowledge of the theory and art of grafting may be, there is also no doubt that much remains to be learnt, more particularly, perhaps, from a scientific standpoint. For although the most recent and authoritative works on horticulture indicate, for instance, nearly fifty different methods of grafting, the list is not infrequently extended by other new methods. Similarly, but to a much greater extent, is the knowledge increasing as regards the theory of grafting, the reason of course being that horticulturists were able to observe the apparent effects of the graft long before the physiology of plants was understood, even if considered. And even at the present day, not every man who can "graft" is in a position to investigate the effect of his work from a scientific point of view. To give the names of the men who have worked in this direction would be to mention many of the most eminent botanists of the century which is now at its close, and even a *résumé* of their interesting and useful results would extend much beyond the limits of a short article.

It is therefore now intended to refer to one aspect of the case only, viz., as regards the influence of the graft on the fruit of the Pear-tree, and in connection with a communication which has recently been made to the French Académie des Sciences, indicating the results obtained from observations made during three years by M. Gustave Rivière, the Director of the Versailles School of Horticulture, and M. G. Bailhache.

On the general subject of grafting, it may be mentioned in parenthesis, and in the words of M. Charles Baltet, one at least of whose classical works on horticulture has been translated into the English language, that whilst unifying their existence the scion and the stock individually retain their original qualities, their characteristic properties, and each their proper constitution; their woody and cortical tissues continuing their development without any intermingling of their respective vessels or fibres. M. Baltet also employs a very graphic phrase, borrowed from the political world, which is, moreover, very applicable in this connection when he states that "grafting is a form of federative union wherein the interested parties retain their autonomy."

But whilst it is generally supposed and usually taught that the graft does not modify the specific character of the scion or of the stock, the above-mentioned explanation is not to be regarded as an absolute law, as has been shown by M. Daniel, whose researches on this subject have already been noticed

in this journal (*Gardeners' Chronicle*, 1895, part i., p. 140). Daniel was enabled to show that an alteration of taste in the scion and in the stock was obtainable by means of the graft, the most marked instance being that of the Savoy Cabbage grafted on the Turnip, whereby the former acquired to a considerable extent the very characteristic taste of the latter plant. The phenomenon was, moreover, proved to be more than temporary and fortuitous, inasmuch as the seeds obtained from the scions so grafted reproduced plants bearing the same "abnormal" characteristics of taste, and thereby indicating a real commencement of hybridity.

This change of taste resulting from the graft, as demonstrated by Daniel, nevertheless referred to herbaceous plants only, and the phenomenon would be all the more important if it also obtained as regards fruit-trees and Vines. Happily, said Professor Gouiraud less than two years ago in the *Revue de Viticulture*, experience has hitherto shown that nothing similar occurs; and although, when the Phylloxera necessitated the reconstitution of many

that it has been observed for a considerable period that fruit trees in general, and some varieties of Pear-trees in particular, undergo certain characteristic changes according to the nature of the stock on which the grafts are placed. And if the essential peculiarities of the varieties are not altered, certain notable modifications obtain as regards the vigour and early maturity of the trees, and the weight, colour, and taste of the fruit when the scion is grafted on Pear-stock, and when it is grafted on the Quince. No precise scientific investigations would, moreover, appear to have been previously made on this particular subject, and Rivière and Bailhache conducted their researches during three years on absolutely identical conditions in connection with a variety of Pear known as the *Triomphe de Jodoigne*. The two trees selected for experiment were of the same age, viz., fifteen years old, their growth had always been normal, they were trained on the same system, they grew side by side, and their roots were consequently nourished by the same soil. But one tree was grafted on the Pear stock, and the other on the

(a) Average weight; (b) density; (c) proportion of free acid (expressed in terms of sulphuric acid); and (d) the total amount of sugar contained in the juice, a factor which, although the last-mentioned is not the least important. The difference, in fact, amounts to nearly nine grammes per litre of juice in favour of the fruit grown on the Quince stock. If the crop gathered from each tree be taken to consist of 300 Pears, each weighing 280 and 406 grammes respectively, the total amount of contained sugar would be represented by 7 kilos. (say 15 lb.) as regards the fruit grown on the Pear stock, and by 11 kilos, (say 24 lb.) as regards the tree grafted on the Quince.

MM. Rivière and Bailhache, moreover, record that certain analogous experiments conducted by them in 1886 and 1887 in relation to the Doynéné d'Hiver had given similar results as follows:—

Stock.	Average Weight of Fruit.		Percentage of Sugar in Juice.	
	Grammes.	Grammes.	Grammes.	Grammes.
Quince	435	11.50		
Pear	230	9.04		

The final conclusions drawn from these observations is, therefore, stated to be that the stock exercises a notable influence on the scion, inasmuch as it apparently has the property of increasing or diminishing most of the physiological phenomena which take place through the agency of the scion, in the formation of the fruit. *Scion.*

HOME CORRESPONDENCE.

GESNERA ZEBRINA.—This species and *G. cinnabarina*, known also under the name of *Nagefla*, are among the most useful and showy of the easily-grown, old-fashioned stove plants. Leaves and flowers are almost equally showy. Mr. Edward Bennett writes with the ease and authority of a master (p. 193) on the culture of these fine Gesneras, and yet he gets on very doubtful ground when counselling that the plants should be stopped when 4 inches high. On the contrary, any stopping of these semituberosous-rooted Gesneras is a mistake. It is a waste of time, as well as a sacrifice of beauty; and as the roots multiply fast enough, there is no excuse for stopping them to induce denser masses of fine foliage or of bloom. The natural stature or habit of these Gesneras is as perfect and pleasing as can be imagined, spikes and foliage being admirably balanced and blended. For general furnishing purposes these Gesneras are most useful when grown in 6-inch pots, and larger masses may readily be had, true to character, by planting from three to a dozen or a score of roots in a pan, vaso, or wire basket. *D. T. Fish.*

CHICNOSCILLA ALLENI.—Kindly note that the name I gave to the natural hybrid between *Scilla bifolia* and *Chionodoxa lucicola* was *Chionoxia* (and not *Chionoscilla*, as spelt by Mr. Nicholson at p. 191 of your last week's issue). These plants vary very much in the size, colour, and general character of the flowers, but so far I have no white variety to record. Some of them are very beautiful, and one form I have is larger than any *Chionodoxa* I have seen. *Janes Allen.* (The spelling adopted by our correspondent is not consistent with the grammatical requirements of the case.—*Ed.*)

EUPHORBIA JACQUINÆFLORA.—I was glad to read Mr. Baxter's note in favour of this brilliant winter-flowering plant. We have few, I had almost written no plants to equal it for decorative purpose in the dead season. The *Euphorbia* (*Poinsettia*) may almost match it in brilliance, but it is heavy and coarse in contrast with the grace and lightness of this queen of the genus. I have little to add to the cultural notes of Mr. Baxter, supplemented as it is by the editor's suggestion of growing on sight or ten cuttings without potting them at all. This secures a bush of brilliant flowers, without the temptation to stop the plants; and if the cultivator does stop the *Euphorbia jacquiniiflora*, he gains nothing by it—he simply sacrifices vital force, and loses time. The shoots stopped after a time seldom break into more than one shoot. I have never succeeded, nor have I ever seen, this brilliant *Euphorbia* stopped, pruned, or trained, into living masses of



FIG. 65.—A GIANTIC CYCLAMEN OF A STRAIN SHOWN BY THE ST. GEORGE'S NURSERY CO., HANWELL. (See p. 206.)

French vineyards by the American *Vitis riparia*, it was stated by many growers that the native Vines were losing their qualities and becoming "riparia-ised." For experiments conducted on an extensive scale afterwards indicated the supposition to be ill-founded, and that as excellent Grapes for the table are obtainable on the native as on the American stock. Similarly with fruit trees, says M. Gouiraud, Pears true to taste being obtained from grafts on the wild stock, with its bitter fruit; and the Sweet Almond may be grafted on the Bitter Almond without any modification of flavour. The same observer also stated that the only apparent effect of the graft, at any rate as regards the Vine, consists in a difference of vigour which is generally less marked, and of fructification, which is generally more abundant, consequent on the natural results of a greater or less affinity between the scion and the stock.

This opinion would not, however, appear to be applicable, without modification, to the fruit of the grafted Pear-tree, in consequence of the recently reported experiments of MM. Rivière and Bailhache, to which reference has already been made, and of which a full account is to be found in the *Comptes Rendus* (tome cxxiv., p. 477). These gentlemen state

Quince, and the following table shows certain variations in the nature of the fruit as indicated by analysis made in 1894, 1895, and 1896:—

Nature of Fruit.	On Pear Stock? Green.	On Quince Stock: Golden-Yellow, Rose-tinted towards the Sun.
	Grammes.	Grammes.
Average weight (of 10 Pears)	280	406
Density of fruit	0.983	0.9887
„ of juice (at 15° C.) ...	1.946	1.051
Acidity of juice (per litre) ...	1.070	1.196
Grape sugar, per litre of juice	90.036	95.466
Total sugar, „ „	93.400	102.333
Ash, „ „	2.163	2.463

These figures, as above indicated, are rather intended for comparative purposes; and for this reason, as well as for the sake of simplicity, it has not been considered necessary to convert them into English equivalents. It will be observed that these results show, as regards the fruit obtained from the *Triomphe de Jodoigne*, grafted on Quince stock, a superiority in respect of, *inter alia*—

brilliance. The nearest approach to this has been reached by clothing walls, rafters, roof, with vigorous young plants from 6 to 9 inches or less apart, and letting them run, grow, and bloom unchecked and unhindered. The well-ripened wood of the previous year will also at times break freely, when it has grown near to the glass in a blaze of light. *D. T. F.*

VICTORIAN ERA FUND.—No one appears to take up the suggestion put forward by Mr. Harris, of asking young gardeners to subscribe this year to the above fund. As one of the young men, I should be very pleased to contribute; and I am sure if head-gardeners would bring the matter before the young men serving under them, the response would be a very liberal one. I should like to remind your correspondent "Life-Member and Annual Subscriber," that the young men are not any the less gardeners, and it is to us the committee will look for new members and annual subscriptions a few years hence. I hope the sum mentioned by Mr. Harris may be reached, and feel sure the young gardeners only need to be asked, and they would subscribe freely; for what project could be more worthy and deserving of support than a fund to help our brother gardeners in distress? *J. C. P.*

THE EUCHARIS MITE.—Some few years since I experienced considerable trouble with the mite. The affected plants were possessed of a few leaves only, and these had a sickly appearance. New and apparently healthy stock was procured, which in a short time assumed the unhealthy appearance of the infested plants. Various means were adopted to eradicate the pest, such as cutting away the diseased portion of the bulbs and washing them in strong solutions, and afterwards potting them in fresh compost. The plants recovered a little strength after such kind of treatment, but in the course of a few weeks they returned to their previous condition. Ultimately, after several ineffectual trials to restore them, it was decided to place them in a lower temperature. With this object in view, they were moved to the north side of a three-quarter-span house, in which Ferns, chiefly Adiantum, were grown, and in which an intermediate temperature was maintained. No attempt whatever was made at this time to eradicate the mite, as it was considered hopeless without destroying the plants. The plants were removed early in June, and in a few weeks afterwards there was a marked improvement. Six months afterwards, some of those growing in 8-inch pots, measured nearly 4 feet in diameter. Two conclusions were drawn from this unlooked-for and most welcome change, namely, that the plants had been subjected to too much heat and light, which was the cause of the unhealthy condition, and that the mite was the result, and not the condition of the decay of the bulbs and their roots. There were several reasons for concurring to these conclusions, one of which was that when they were grown along with other plants requiring a stove temperature, they were invariably in their worst condition in the summer. Upon the approach of winter, with its dull dark days and a lower temperature, they showed a slight improvement. While in their new quarters it was observed that they could not bear so much light and sunshine as the Adiantum without injury. During hot weather an abundant supply of fresh air was admitted both day and night with evident advantage to the plants. In a few months the mite had completely disappeared, during which time no insecticide or mite-killer had been applied to them. All that they received besides water was an occasional application of liquid-manure. I am fully convinced that in this instance the unhealthiness was brought about by employing too high a temperature, and affording the plants too much sunshine. *W. Neild, Cheshire Agricultural and Horticultural School.*

A RAID OF VOLES ON THE SCOTS FIRS.—Just after the last brief spell of frost and snow was disappearing at the end of last month, on examining a large break of two-year transplanted Scots Fir growing in our nurseries, we were surprised to find that the points of the plants were completely eaten away. Knowing that this damage could not have been caused by squirrels, as none of these bushy-tailed denizens of the forest haunt this neighbourhood, we were somewhat puzzled to know the right cause. The suspicion that any kind of game could have done the damage was very remote, as the land on which the Firs are growing is far from any game resort, and is close to a public and much-frequented highway. In our dilemma we sought counsel from Mr. Malcolm

Dunn. With his usual courtesy and promptitude, Mr. Dunn replied to our enquiries as follows:—

"DEAR SIR.—I have examined the specimens carefully, and I believe it is the work of field mice or 'voles,' as it is exactly like what I have seen done by them on one or two occasions. On one of these I watched and saw scores of voles nibbling the bulbs out of the points of young Scots Fir, three years planted out, and about 4 feet high. They quite ruined an acre or two of the plantation, which had been formed on rough grass land. About a quarter of a mile from the plantation there was a small home nursery enclosed with hedges, and a hedge ran from one corner of it direct to the Scots Fir plantation (it was a 'mixed' plantation, but Scots Fir were three to one of all the others), and the Scots Fir, as well as some of their trees, were attacked, and their buds hadly eaten out one winter by the voles. It was at first thought to be the work of squirrels, but none was ever seen in the nursery, and there was no wood with large trees near to harbour them. On examining the hedge that ran across the grass field to the infested plantation, it was found to be full of vole 'runs' amongst the coarse herbage at the bottom. We cleared out the hedge bottom, destroying the cover for the mice, and the 'runs' and the voles troubled the nursery stock no more. This happened in Worcestershire in the early 'sixties.' I have only once seen a similar attack, about fourteen years ago in Nottinghamshire, but the forester in charge of the plantation had no doubt about the cause of the injury, as he had seen the 'mice,' as he called them, sitting on the trees nibbling the buds. If black game (muirfowl) were plentiful near Kelso, suspicion might rest on them, or on capercaillie, but neither, I believe, seen in your neighbourhood. Moreover, I am quite sure it is not their work, which is much more roughly done—their leaves as well as the buds being pecked off by them. Have you any rough grass or similar cover near the Scots Fir in which the voles can harbour? Dirty bottoms of hedges are good shelter, also rough grass and weeds."

"MALCOLM DUNN."

On receiving Mr. Dunn's diagnosis, we proceeded to act upon it by setting mouse-traps among the Scots Firs, and on the very first morning thereafter we secured a big 'bag' of voles, which, without doubt, had been the depredators. An old hedge banked up in front with loose stones, and here and there an old Ash tree with immense spreading roots, had provided a good harbour for the voles. In all our experience, however, we never had any Scots Fir—or, in fact, any other young trees attacked by voles, and it would be interesting to know whether any other nurserymen have suffered any damage this winter from these destructive vermin. Of course, the damaged Scots Firs were burned at once; and, as the traps have been kept set ever since, the plague has been stayed, though not before a large number of voles had been captured. To all appearance, however, the pest has now been effectually stamped out. *Lainy & Mather.*

THE LATE DR. HOGG.—To some of us it only seems a few years since he, in connection with Mr. Johnson, was launching the *Journal of Horticulture* and its new name, and enlisting Donald Beaton, Robert Fish, Mr. Errington, and other eminent horticulturists on the staff of the journal. And now, scarcely any of the veterans are left, and the founder and zealous promoter of the journal has fallen. I look upon the *Fruit Manual* as the greatest of Dr. Hogg's publications. After the death of Mr. Robert Thomson of Chiswick, Dr. Hogg filled the highest place of honour and usefulness in British pomology; and his life-work was chiefly devoted to the raising of British fruit-growing to high rank among our national industries. Had Dr. Hogg gone abroad and annexed thousands of acres of someone else's land, or killed a few thousand savages, he would doubtless have been honoured by the bestowal of a title. But as he devoted his life to teaching how more and better fruit might be grown for the masses, and making life more worth living for all, he passed away without state honours or state favours. But his work will endure, and there are few cultivators among us who are not grateful for the services Dr. Hogg rendered to them throughout his laborious and honourable life. Beaton and Johnson to his memory. We are not likely to look on his like again. *J. T. Fish.*

The death of Dr. Hogg is another reminder of the dropping of links of the chain of distinguished horticulturists since I went to Meadow-

bank in 1854. I was drawn first as a writer to the *Cottage Gardener* and the *Journal of Horticulture*, a few years after that time. I recollect in my first visit to London after leaving Hugh Low's nursery—where, by the way, there was not a single Orchid potted, although the son in Dorset sent home lots of plants which were disposed of at Stevens' Rooms—of dining with the Doctor and his coadjutor, Johnson, who was very dead, at one of the best hotels, along with the late William Thomson, when we had a most happy evening. Dr. Hogg and myself, always intimate, but barred a little from each other by our different studies, met occasionally, especially after the marriage of his daughter to a Glasgow gentleman, Alas! what of our compeers? The gaps that are occurring year by year make me begin to think I am getting old, although physically I am as well as ever. How changed Orchid culture now is! Many will remember my beating soundly all comers for two years in succession from Scotland—little Scotland. Now you could not, if you were trying to live by selling Orchids in that country, make as much as would buy seed to feed a canary. This town is now the great centre of Orchid wealth. In a circuit of 30 miles from Manchester there is more money spent in Orchid-buying than in all England and Scotland lumped together. Yorkshire does not count for much, large as the county is, and if trade were bettering, the growers of Orchids would double in number in a short time. After reading your touching notice of our old friend, I did not resist penning you these few words. *J. Anderson, Manchester.*

ENGLISH ORCHARDS.

(Concluded from p. 185.)

BETTER selections of Plums are much needed, and owners of orchards will be wise in making an endeavour to extend the season as far as it is possible to do so by growing more early and late varieties. A good selection for orchards would comprise Rivers' Early Prolific, Tuo Ozar, Green Gage, Poad's Seedling Victoria, and Monarch. I do not propose discussing the details of grafting, but would strongly advise, that instead of the tree being headed back to the trunk or to the base of branches with a diameter of 6 or 7 inches, in accordance with the practice that largely obtains, they should be simply cut back to the smaller branches not exceeding 2 or 3 inches in diameter, and a graft placed on each shoot. Not only will the use of the more perfect when cut the smaller branches be grafted, but there will be a considerable saving in time, as fruitful heads will be obtained in two or three years.

In the renovation of orchards that have become unproductive through bad usage, attention should first be directed to the restoration of the vigor of the trees. The heads should be thinned by the removal of useless spurs, and the cutting-back of weakly branches; and when this has been done, spray the trees with warm water, in which has been dissolved caustic soda and commercial potash at the rate of 1 lb. each to 25 gallons. This mixture, applied in the form of a spray during the winter season, will not only be a disinfectant, will clear them from moss and lichen, and destroy the eggs and larvae of some of the insect pests. If the trees are infested with American-blight, as, unhappily, many of them are, means must be adopted for the eradication of the pest, and there is not a better method than to dress the infested parts with a mixture prepared by dissolving ½ lb. of carbolic soft-soap in a gallon of hot water, and then adding 1 pint of petroleum, and well incorporating it while hot. As the starved condition of the trees is necessarily due to the impoverishment of the soil, it follows as a matter of course that the soil be enriched, and that the manure be used in a judicious and increased for the purpose of stimulating them into activity. There is no better course of procedure than to break up the surface of the soil to a depth of 3 or 4 inches in the autumn, and dress with lime; and early in the spring apply a liberal dressing of manure or artificial manure. Farmyard or stable manure should be used where available, and if this is not at command, use artificial. An excellent mixture of these would be one consisting of three parts by weight of muriate of potash to five parts of superphosphate of lime, and 8 cwt. per acre will be a good rate at which to use it. A liberal dressing of soda will be beneficial, as there would a dressing of nitrate of soda at the rate of 1 cwt. per acre, after the trees have commenced to make new growth. The breaking-up of the surface soil, as here advised, will have a highly beneficial effect upon the trees; and I would mention that while excellent crops may be obtained from poor orchards, it is only by cultivating the spaces between the trees that the finest fruit can be obtained.

I might speak at length on grading, packing, and marketing, for the owners of orchards have much to learn before they can achieve success in carrying out these important details, but I am anxious to avoid unduly taxing your time. The question of storage is also of pressing importance, and I would strongly advise that in connection with all orchards of any considerable extent there should be a spacious store-room. This need not be elaborate in detail, or costly in construction, but it should be substantial, and so designed that a low and uniform temperature can be maintained throughout the winter. It ought in fact, to be best-proof and frost-proof. A span

roof structure about 12 feet in width and 10 feet or so in height, and fitted with open shelves on either side, will perhaps be the best form of structure, and if it be provided with double walls, double windows, and double doors, and a thick roof of thatch, the fruit will have the advantage of a cool, equitable temperature. It is not without considerable regret that I have to dismiss the question of storage thus briefly, for it has an important bearing upon the profitability of our orchards. In conclusion, then, the owners of orchards have, generally speaking, not only to learn how to restore their orchards to fruitfulness and maintain them in that condition, but they must learn also to store the produce until such times as they can place it upon the market with most profit to themselves. The owners of English orchards have certainly much to learn and much to accomplish here the 212,000 acres devoted to fruit can be brought into a condition, viz., Apples, Pears, and Plums, enjoy greater natural advantages.

NEW INVENTION.

THE VAN REYPER GLAZIERS' POINTS.

In fig. 66 is illustrated a patented glazier's point that has been in use in America for a considerable time past. The Van Reyper's perfect glaziers' points are said to never work out after being properly driven in, which is an easy operation with a square-headed hammer. It is a convenience also that there are no rights and lefts, and they may, therefore, be used on either side of the sash-bar. If the glass should get broken, the points can be forced out in perfect condition by the use of a chisel. For preventing the glass from sliding, they are recommended as the best means possible. Messrs. Barr & Sons, Covent Garden, W.C. are the agents for the sale of the articles in this country.

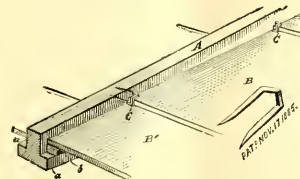


FIG. 66.—THE VAN REYPER GLAZIERS' POINTS.

A, sash-bar.
B, E, sheets of glass.
C, G, the points at which the glazing points are inserted.
D, a, and b, the rabbit.

SOCIETIES.

HORTICULTURAL CLUB.
VARIATIONS OF SEEDLING FRUITS.

The following remarks were made by Mr. T. FRANCIS RYVES on the occasion of the meeting of the Horticultural Club, held at the Hotel Windsor, Victoria Street, S.W., on March 9, as notified in our last issue:—

"No doubt raising seedling fruits has for many years been a matter of great interest to those who have entered all forms of fruit-culture, and pomologists have attempted, with more or less success, to produce a new variety of fruit with rather less than more success. One name, that of Andrew Knight, has achieved a lasting reputation in England, and the name of Van Mons in Belgium is equally well known as the raiser of numerous Pears, the greater part of which have not retained the position he claimed for them. The Pear known by his name, the "Van Mons" (Lion le Clerc), was not his seedling, but was named by the raiser (Lion le Clerc) as a compliment, the compliment being returned by a Pear named Lion le Clerc (Van Mons), which is a very inferior fruit, and fit only for the kitchen.

The number of Pears described by Andre Leroy and Dr. Hogg testify to the persistent attempts of seedling fruit-raisers to obtain Pears of superior quality. It is natural to suppose that for this purpose the fruit selected for sowing would be of the best quality, and yet how disappointing are the results. Now fruits appear and disappear in regular order, as whether they are raised by lot or chance. It is seldom indeed that varieties carefully cherished by the raiser fulfil the description given of their qualities.

The eccentric differences observable in Pears alone, are exasperating. Crossing with sorts possessing superior qualities does not appear to give any special results; there is always the element of chance, and the careful experimenter is beaten by a chance-grown seedling. The Duchesse d'Angoulême, a most popular Pear in France, the climate being better suited for its development than in England, was found in a farm-garden near Angers; Pierre du France also being derived from a small village garden in France. There is a strange adherence to the prototype in some Pears the Jargonelle for instance. This Pear is a standard of excellence of some. Under the name of Espargne it is said by Andre Leroy to have been a popular Pear in France in the year 1580. During this long period there does not appear to have been a exact reproduction by seed. Spontaneous there are in plenty—Leroy gives twenty-two—but there is not a single hint of any of these synonymy being seedlings.

One of the oldest known Pears in England, the Autumn Bergamot, said to have been introduced by the Romans, has seedlings in plenty, and a long list of synonyms, but apparently no exact reproduction. The seedlings are earlier and later, larger and smaller, but none are exactly like the prototype. Another popular Pear, the Marie Louise, persists

in keeping the place it has gained; numerous synonyms, but no seedlings, which exactly reproduce the original. This Pear, from its excellent quality, must have been a source of many experiments. Of other typical Pears which have not been reproduced, the following will be familiar examples:—Williams' Bon Chrétien, Louise Bonne of Jersey, Glout Moreau, Doyenné du Comice, Passe Colmar, and Easter Beurré, though they have been in existence long enough to have produced many seedlings. I have raised seedlings from these varieties, and have not gained a single fruit like the parent, and, in fact, all have been more or less worthless. As with Pears so with Apples. The Ribston Pippin has not, to my knowledge, been reproduced; it is said to have been raised from a chance seedling. The Wyken Pippin, a very old and esteemed variety, has not been reproduced, or the King of the Pippins, and Golden Pippin. Old Nonpareil, of which the seedlings are nearer the prototype than most of the old varieties, is not exactly reproduced.

The Peach is perhaps the fruit which approaches more nearly reproduction than most, but it does not differ much from the apparent rule of diversity. The Grosse Migonne, Bellegrape, and Madeline have numerous seedlings which approach the originals in quality, but differ in the flowers and glands. The catalogue of the Royal Horticultural Society enumerates forty synonyms of the Grosse Migonne. These do not appear to be seedlings, but the names seem to have been given by those who have grown the sorts, but lost the original names.

Nectarines are subject to the same law. The Erluge and Violette Hâtive seem to have kept to their types. The Plum has also an apparent fixity of tenure. The Green Gage, which was introduced into Europe many centuries since, seems to have adhered to its prototype, although it is said to be raised from a seed, with the result of perfect reproduction. The number of synonyms points rather to the fact that seedlings vary, as do the seedlings of other classes. The Early

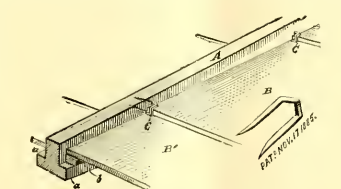


FIG. 66.—THE VAN REYPER GLAZIERS' POINTS.

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Proflig, of which I have raised many seedlings, does not reproduce itself, and the fruits differ essentially from the parent.

It is the same in the case of Cherries. The numbers of synonyms accorded to the May Duke, Bigarreau, and Reine Hortense, seem to show that exact reproduction has failed. The subject is interesting, and is capable of much extension. In our uncertain climate the aid of glass is almost absolutely necessary, and the experiments, if a man wishes to see the results, should be begun at an early age."

ROYAL HORTICULTURAL.

MARCH 23.—There was another large display on Tuesday last, when the usual fortnightly meeting of the committees was held in the Drill Hall, James Street, Westminster. The hall was not crowded, however, to the same degree as at the previous meeting, when the number of exhibits was quite exceptional.

The Orchids how form a very important feature, as there are many species in bloom, and on Tuesday some excellent examples of cultivation were shown, particularly a plant of *Platanus Cooksonii* from N. C. COOKSON, Esq., which exhaled any we have before seen. Spring flowers, such as *Hyacinthus*, *Tulips*, *Narcissus*, *Cyclamens*, border and Alpine plants, occupied much of the space, and good collections of each were shown. *Hippocrepis* too were staged in several instances, including a large group from Liverpool & Co. The rest of the exhibits included miscellaneous plants staged for certificates; also Rose blooms, Camellias, and groups of ornamental plants. There was but little fruit contributed, and in the competition for Pear in Pots, the display made was exceedingly weak. The attendance throughout the day was good.

Floral Committee.

Present: W. Marshall, Esq., in the chair; and Messrs. H. B. May, R. Dean, H. Herford, Geo. Stearns, J. Jennings, Jas. Hirdson, Chas. Jeffries, Geo. Nicholson, J. Fraser, J. D. Pawle, W. Bain, Thos. Peel, Chas. E. Pearson, C. F. Sher, H. J. Jones, Ed. Mawley, J. F. Cuthish, Ed. Beckett, D. B. Crane, T. W. Sanders, C. Blic, H. Turner, Geo. Paul, Owen Thomas, and Jas. Walker.

An exceedingly pretty collection of fibrous-rooted Begonias was staged by Messrs. H. CANSELL & SONS, Swanley. Several varieties of the manicata type were observed, and one of the best of other varieties shown was Paul Braunt, rose-pink, an unusually floriferous variety. There was considerable number of that among the flowers, and all of them are desirable (Silver Banksian Medal).

Roses were again magnificently shown by Mr. GEO. MOUNT of Canterbury. A good number of Tea varieties were included in this collection, and a dozen and a half blooms of Catherine Mermet. All of them were very well shown (Silver Flora Medal).

From Mr. FRY, Lockinge Gardens, Wantage, came a number of dozen fine blooms of *Camellia rotundata*, and a great lot of dozens and a spray of blooms of the Rose Fortune's Yellow, a capital old variety of exquisite colour and fragrance (Bronze Banksian Medal).

Mr. WILLIAMS, Esq. to the Duke of MARRBOROUGH, Blenheim, exhibited blooms of *Carnation La Vallette*, and a plant in flower of *Carnation Mrs. Wynn*. The former is a large rose-coloured flower with white edges, the latter a bronzy-yellow colour.

Messrs. LINDEN, Brussels, were recommended an Award of Merit for a variety of *Anthurium Scherzerianum*, named *Georg Slaughter*. It has an extra wide spathe, being almost round.

A fine clump of *Disporum Leschenaultianum*, shown by Messrs. JAS. VETICH & SONS, represented a plant that will be very useful for decorative work. In appearance it is like a variegated *Solanum*'s Seal, but is branched, and has more leaves. It is perfectly hardy, and possibly of use for forcing (Award of Merit). Two plants of *Rhododendron* in flower were shown from the same establishment; they are said to be raised from seeds brought from China (Yunnan), and are said to represent new species. In both cases the flowers were small, and the inflorescence short. Messrs. VETICH also exhibited some very fine *Hippocrepis* truss, and an Award of Merit was recommended to Pora, a large flower of fairly good form, excellent substance, and in colour velvety-scarlet marked with white.

There were a few other varieties of *Hippocrepis* contributed by Captain HOLLOM, Westabirt, Tetbury, Gloucester, in which the colours were dark and good. *Hippocrepis* are seldom contributed to the Drill Hall from the Liverpool district, but upon this occasion there was a large group of these plants in flower from Messrs. R. E. KEE & SONS, Alburgh Nursery, Liverpool. It contained some very meritorious varieties, among which we may instance *Cynthia*, a self-coloured scarlet; Ajax, crimson; Scarlet Gem, Lother, Imperial, Melpomena, a light-coloured flower; Titania, &c. (Silver-gilt Flora Medal).

Hyacinths and *Tulips* in pots from Messrs. W. CUTBUSH & SONS, Highgate, London, N., made a grand display. These are noticed on p. 206. Messrs. CUTBUSH had also a few *Oleivins* in flower, and *Magnolia Alexandrina* in bud, *Calla Elizabeth*, *Wistaria sinensis*, *Prunus*, *Cercaria avium*, *Rh-p*, *Lobelia*, &c. (Silver-gilt Flora Medal).

An excellent *Citrus*, named *Chas. Vermorel*, shown by Messrs. W. BALCHIN & SONS, Brighton, was deservedly recommended an Award of Merit. It produces a large, compact truss of fine flowers.

Messrs. JAS. LAING & SONS, Forest Hill, S.E., exhibited a long-coloured *Citrus*, named *Sangeria*; and a plant in flower of *Richardia Pentlandii* scandula, with spotted foliage.

From Messrs. R. & G. CUTBUSH, Southgate, was exhibited a collection of named "Tulips suitable for forcing, which was awarded a Bronze Banksian Medal. An unmercifully preciseworded display of *Narcissus* and *Tulips* in pots was made by H. TATE, Esq., Park Hill, Streatham Common. The collection rather crowdily filled the table that runs across the hall near the entrance door, and contained numerous varieties of each genus (Silver Banksian Medal).

Groups of miscellaneous plants were well shown by Messrs. JAS. LAING & SONS, Forest Hill, London, S.E. (Silver Flora Medal); and Messrs. J. PIERCE & SONS, Rompall Park Nurseries, Norwood Road, London, S.E. (Silver Banksian Medal).

Tulipa Kaufmanniana shown by Messrs. WALLACE & CO., Cambridge, and Messrs. JAMES JONES, Garden, was awarded a first-class Certificate. It is a new species said to come from Turkestan. The segments are large and broad, yellow from the base to about half way up, and white over the remainder; some of the segments were reddish on the exterior, but this colour did not appear in all of the flowers. It is a showy species.

Erythronium Nuttallianum, exhibited by the two firms just mentioned, was recommended an Award of Merit. The flowers are yellow, two being produced usually upon a spike; a distinct and pretty species.

A botanical Certificate was awarded to *Fritillaria alpinia*, exhibited by Messrs. BARR & SONS. It is one and two flowered; the blooms are purple outside, and yellow in the interior. Messrs. WALLACE & CO. exhibited several other *Erythroniums*, including *Hendersnii*, and *Hartwegii*. Messrs. W. GORDON & SONS, Colindale Nurseries, Murrayfield, Edinburg, exhibited a collection of six species of *Primula* in a basket; also some *Saxifraga*. A white-dowered variety of *Primula casimiroana*, and an alpine *Arenaria* with variegated foliage, were included (Vote of Thanks).

Messrs. PAUL & SONS, Old Nurseries, Chesham, had a pretty group of hardy and alpine plants. We observed the specimens of *Primula* and *Saxifraga*, *Anemone pulsatilla*, *P. p. patens*, *Androsace carnata*, also a species of *Primula* and *Saxifraga* in flower. A plant of *Deutzia linnocni* was

shown, and blooms of Maréchal Niel Rose, both white and yellow blooms (Silver Banksian Medal).

Messrs. W. PAUL & SON, Waltham Cross Herts, exhibited a group of Camellias and some Roses, for which a Silver Banksian Medal was awarded.

An Award of Merit was recommended to a fine gold leaved *Polyanthus* named Woodside Red, exhibited by Mr. R. DEAN, Banleigh Road, Ealing.

Mr. C. TURNER, Royal Nurseries, Slough, exhibited a few plants of H. T. Rose Souvenir de Madame Eugène Vadière, with white rather than flowers; also of H. T. Rose Antoine Rivière, a very fine rose salmon-coloured variety (Award of Merit).

Cyclamens were exhibited by the CAVENDISH ROAD NURSERY Co., Haswell, W., who made a considerable display with plants of a commendable strain (Silver Flora Medal).
FURNELL, FERRIS, Esq., Woodlands, Streatham, showed a group of Primulas and early-flowering plants of the rockery, including alpine Auriculas, Drabazoides, a few show Auriculas, *Thalictrum adiantifolium*, Saxifraga Bursaria, and Primula Wulfeniana, with lovely many-coloured flowers, a plant of very dwarf stature. The exhibitor received a Bronze Banksian Medal.

Mrs. ABEOR, South Villa, Regent's Park (gr., Mr. Kelf), showed a great quantity of Dutch Tulips, chiefly or entirely single-flowered, growing in pots, and a large number of Hyacinths, and English-grown and other Lily of the Valley. The table making up the display of Silver Flora Medal.

Mr. H. B. MAY, Dyson's Lane Nurseries, Upper Edmonston, exhibited a group of Roses and Clematis in pots, furnished with an edging of Ferns. The Rose was Turner's Crimson Rambler, and the Clematis, Fair Rosamond, a profuse-blooming variety, the flower white, with a suffusion of lilac in it (Silver Flora Medal).

Narcissus Committee.

Present: Rev. C. Wolley Dod, in the chair; Rev. G. H. Engleheart; Messrs. J. Walker, J. T. Bennet-Poë, A. Kingsmill, C. R. Senese-Dickins, and Miss Willmott.

The Royal Horticultural Society's meetings this spring occur at unfortunate dates for the Narcissi. The extreme earliness of the season has caused the flowers in Scilly and Cornwall to be already past, and so fast are they opening everywhere in the last week of March, that it is probable they will have faded before the next meeting on April 13. Tuesday's show caught only the first of the flowers in the London neighbourhood, and it so happened, that the two considerable trade exhibits consisted of varieties almost entirely opened under glass, or grown for the purpose further afield. Although it is a matter of regret, most of them could have been gathered from the open ground within a very few days.

Messrs. BAIR were, as always, well represented by a very large bulk of Narcissi of all the better-known kinds, noticeable for freshness and clear colouring. We were struck with the brilliant orange of C. Beckhouse among others. Some collected Spanish and Portuguese forms of N. Pseudo-Narcissus were distinct and pretty, e.g., *Cannots*, *Santa Maria*, and *Cuboceras*. The natural hybrid of N. Pseudo-Narcissus and triandrus, *Queen of Spain*, a graceful form, was also shown in some quantity.

Mr. T. S. WADE sent a large number of pot-Daffodils, somewhat drawn by over-forcidg, interspersed with vases of flowers of much better quality.

Of amateurs, H. TATE, Esq., Park Hill, Streatham Common, sent an unusually comprehensive group of Narcissi in pots, together with Tulips and other spring bulbs. The Narcissi were extremely well grown, and we singled out *Maximas* and *Golden Star* as especially fine samples.

Mrs. ABEORT, South Villa, Regent's Park, showed, as part of a very large group of spring flowers, a choice collection of *Polyanthus* Narcissus in many varieties.

The Rev. G. L. ENGLEHEART, Applethorpe, Andover, had a small stand of his own hybrids and seedlings from the open air. Chief among them was the magnificent new Ajax Ellen Willmott, five of its immense and massive white and gold flowers being shown. This was unanimously awarded a First-class Certificate. *Star*, a flower with white divisions and a broadly expanded crown of vivid red colour, obtained the same award; and *Lettice Harward*, a trumpet Daffodil in the way of Horsfield, an Award of Merit. Mr. ENGLEHEART'S contribution contained many other seedlings of beauty and interest.

The Rev. W. WILKS, Shirley Vicarage, Croydon, showed a curious hybrid between N. Cyclamineus and a garden form of Ajax.

Mr. J. WALKER, Horn Common, brought a large bunch of Lady Watkin, a form of the well-known Sir Walker with a cup of much deeper orange.

Orchid Committee.

Present:—(Synonym Contradict), Esq., in the chair; and Messrs. Jas. O'Brien (hon. sec.), De B. Crawshaw, Norman C. Cookson, G. W. Law Schofield, W. H. White, W. H. Young, H. J. Chapman, T. Statter, W. Thompson, W. H. Protheroe, H. Williams, F. Mason, J. Douglas, H. Ballantine, H. M. Pollett, E. Hill, J. G. Fowler, and T. B. Haywood.

The fine show of Orchids included most of the species that flower at this season, and this, notwithstanding, few Certificates were awarded. Considered as a single species the finest exhibit was a magnificent plant of the best original form of *Phaius* \times *Cooksonii*, sent by the raiser, Norman C. COOKSON, Esq., Oakwood, Wylam, Northumberland (gr., Mr. W. Murray), and for which he was awarded a Silver gilt Flora

Medal. The plant was in fine health, and bearing numerous aeriole bright green leaves, from among which ascended eighteen strong flower-spikes. The flowers, being of a rich red tint according to age, had a lip of rich clear-purple with an orange glow, the sepals and petals being of a light rose colour on the face, and blue-white on the reverse side.

Baron Sir H. SCHÖNER, The Dell, Egham (gr., Mr. H. Balandino), showed a pretty group of rare *Odontoglossums*, for which a Silver Flora Medal was awarded. Among them were the original, and still unique, plant of *Odon. var. in* tint according to age; six-branched *sp.*; some fine forms of *Oodontoglossum* \times *Wilckeanum*, O. Cordinei, and O. crispum, among the last-named being a very peculiar white form, with curiously fringed, upturned petals. Other remarkable plants were a hybrid *Oodontoglossum*, with cream-white flowers tinged with rose, and the one spotted with purple; another of a clear bright yellow, and the original plant of *Laelia* \times *vittalina*, with three large orange flowers—still the best hybrid of this colour.

Sir FREDERICK LAWRENCE, Bart., Burford, Dorking (gr., Mr. W. H. White), staged an interesting group, in which were several rare species, including *Angrocium* *Ellisianum*, an old species generally represented in gardens by *A. articulatum* (which also was shown); also a *Mooreauna* (Botanical Certificate), a pretty little species, with salmon-coloured flowers. In the centre was a fine plant of *Laelia rubescens*, with eight fine spikes of pretty light rose flowers (Cultural Commendation). *L. rubescens* \times *var. in* tint according to age, with several examples were shown, varying in colour from yellow to pale red; *Miltonia* \times *Bleniana*, with four fine spikes, bearing together nineteen flowers; the singular *Catacnum* *barbatum* *spinosum*; the cherry-red *Masdevalla ignea* *Bodlardi*; *Dendrobium* \times *Wiganii*, &c. A Silver Flora Medal was awarded.

Messrs. JAS. VENTON & SONS, Ltd., Chelsea, also received a Silver Flora Medal for a fine group, in which specially noteworthy were the singular new *Epi-Cattleya* \times *matutina* (E. radicans, C. Bowringiana?), a very remarkable exhibition of the vagaries of hybrids; for whereas the seeds were borne by *Cattleya* *Bowringiana*, the seedlings, air-root-bearing character of *Epidendrum radicans* was retained. The flowers were about 2 inches across, yellow tinged with vermilion. The lip, which in form was ovate and irregularly notched, in one instance, displayed a distinct tendency to the trilobed form in another. In colour it was a rich, deep rose, red in the centre. *Epidendrum* *Andresii*, E. \times *Andresio-Willisii*, E. \times *elaeagnum*, the free-flowering *Laelio-Cattleya* \times *Pallas*, *Cymbidium chrysura* and C. \times *chrysura-Lovianum*, *Dendrobium* \times *Ainsworthianum* *intermedium*, D. \times *A. sulphureum* and D. \times *A. album*; B. \times *Elchii*, B. \times *Euryclia*, D. *Gravinae* *Triandri*, &c. Over all exhibited were five fine spikes of *Oncidium Cavendishianum* and O. *sarcodes*. Also in the group were *Trichopilia brevis*, *Laelia* \times *Noveltii*, *Masdevalla* \times *Parlatoreana*, and other things of interest.

Messrs. S. ELLIS, Esq., Harehorne, Dorking (gr., Mr. Baiter), also awarded the Banksian Medal for a group of excellently grown *Oodontoglossums*, &c., finely flowered, and including O. *Andersonianum*, Ellis var. O. *Cordinei*, O. *crispum* varieties; and also *Dendrobium nobile*, D. *Ilildebrandii*, *Miltonia Warscewiczii*, and the curious little *Epidendrum varicosum* (Botanical Certificate). Messrs. V. LEOPOLD, Esq., Internat. Exh., St. Leopold, Brussels, showed a select group of *Oodontoglossums*, which secured a Silver Banksian Medal. The gem of the group was O. *crispum* *Lacini*, which secured the only First-class Certificate awarded. The flower was perfect in shape, white tinged with rose, and latched with several large purple-brown blotches on each segment—a truly grand flower. Other good things in the group were O. \times *Pauwelsii*, a cream-white flower spotted with brown, of the *Andersonianum* class; several fine forms of O. \times *Wilckeanum*, &c.

De B. CRAWSHAW, Esq., Rosefield, Sevenoaks (gr., Mr. S. Cooke), showed a group of good *Oodontoglossums*, among which were the fine O. \times *Andresio-Willisii*, a very curious hybrid; Rosefield variety; some good white O. *crispum*, &c. (Silver Banksian Medal).

Messrs. F. SANDBER & CO., St. Albans, were awarded a Silver Banksian Medal for a good group of Orchids, in which were several very fine varieties of *Cattleya Schroderae*, also C. *Mendellii* var. *fruticosa*, a charming variety with a broad white and red margin; *Oodontoglossum* *Tessellatum*, one large form having a fine, pure white labellum; *Oodontoglossum* *Ux Skimmer*, and other *Oodontoglossums*; *Miltonia vixillata*, *Phaiacopsis Boxalli*, *Dendrobium* *Phaiacopsis*, and other *Dendrobiums*; the pretty blue *Utricularia* *Forgetiana*; *Cypripedium* *exoniense* *Willmottii*, a very curious hybrid; also a fine spike of *Cypripedium Rothschildianum*.

W. THOMPSON, Esq., Walton Grove, Stone, Staffs. (gr., Mr. W. Stevens), showed in grand form *Oodontoglossum* *Ruckerianum* *ocellatum*, a charming bright-rose tinted variety, which was awarded an Award of Merit, a not very liberal recognition of so good a plant; also a good home-raised *Oodontoglossum* \times *exoniense* *Willmottii*, a very curious hybrid; a fine spike of *Cypripedium Rothschildianum*; *C. Grange* *Soullgates* (gr., Mr. Whiffen), secured a Silver Banksian Medal for a very good group, in which several good examples of the dwarf form of *Dendrobium Janesium* were to be seen, and some splendidly flowered *Oodontoglossums*, *Lycaste Skinneri*, and other showy Orchids arranged with them. In the centre were some good *Cattleya*, *C. Triandri* *plumosa* having very handsome flowers, that possessed rich purple fluting on the lip.

THOS. GABRIEL, Esq., Streatham (gr., Mr. Guyett), sent an effective group, in which were prominent plants, spon-

dally flowered, of *Dendrobium Wardianum*, D. *Devonianum* and *Coleogyne cristata* (Silver Banksian Medal).

From Fox BARNOR, Devonshire (gr., Mr. Schlecht), sent an interesting collection of Orchids including, comprising *Phaiacopsis Aphrodite* var. *Dayana*, two forms of P. *Stuartiana*, *Warscewiczia discolor*, *Oncidium* *Phaiacopsis*, *Miltonia* *Phaiacopsis*, *Lycaste xanthophylla*, *Warscewiczia aromatica*, and other species (Vote of Thanks).

Messrs. G. HERRING, Esq., Dulcote, Tunbridge Wells (gr., Mr. Barnes), sent three small plants of a Chinese form of *Dendrobium nobile*, all with large, finely-formed, and distinct flowers. The largest, named "Hutchinson's Variety," received an Award of Merit. The question arose as to whether they were not natural hybrids.

Messrs. G. HERRING, Esq., Dulcote, Tunbridge Wells (gr., Mr. J. Howes), showed a very pretty plant of *Platylidys glaucus* var. *valida*; and a charming, nearly white form of *Cattleya Triandri*, which, from a gardener's point of view was far superior to some known as C. *alba*, the flowers were so perfect in shape.

Messrs. LITTLEFIELD, Esq., Rockhills, Eridge Hill, Sheffield, showed *Dendrobium crassinode* *Barberianum*. Messrs. HEON LOW & CO., Clapton, sent *Cypripedium* \times *Pretwitti*—a *C. villosum* cross. A. H. SIMEZ, Esq., The Grange, Wallington (gr., Mr. Cummins), sent a flower of *Sobralia Ruckeri*. F. W. MOORE, Esq., Royal Victoria Gardens, Glasnevin, Dublin, sent *Cypripedium picturatum*.

MALCOLM S. COOKE, Esq., Kingston Hill (gr., Mr. Buckell), sent a fine form of *Oodontoglossum nebulosum*; and Messrs. JOHN LAING & SON, Forest Hill, had in their group of miscellaneous plants some good Cattleya, *Coleogyne cristata* *alba*, *Oodontoglossum*, and *Ada aurantiaca*.

Fruit Committee.

Present: Philip Croxall, Esq., in the chair; and Messrs. T. F. Rivers, Jos. Chod, G. W. Cummins, A. F. Barrow, T. J. Saltmarsh, J. Wright, A. Dean, Jno. A. Laing, C. Herrin, Geo. Woodward, J. A. V. Veitch, Geo. Wythes, H. Balderson, J. Smith, F. H. Lane, and Geo. Reynolds.

THE LATE DR. HOGG.—Mr. Wilks spoke as follows:—Mr. Chairman and Gentlemen of the Fruit Committee,—We have all of us, I am sure, come here to day with very contradictory feelings. We one and all want to get up and hear testimony to the great loss which this committee has sustained since last we met; and yet we shrink from doing so, as feeling (which is a very true and a very true opinion) that there is not one among us capable of doing justice to the theme. In one sense, then, I shrink from the subject as from a task too hard for me to perform—a burden I am unequal to bear; whilst, in another sense, I feel that the duty which the chairman has deputed to me is the greatest honour he could confer on me.

Gentlemen, we have lost one whom all who know him in all intimately loved sincerely; whom all at this table revered; whom every English gardener honoured; whom all pomologists in every country of the world looked up to and respected as the chief authority on fruit—our dear friend and coadjutor, Dr. Hogg—the founder of this committee—has been taken from us.

But what a splendid work and what a grand example he has left behind! Seldom has it been given to a man to reduce to such (comparatively speaking) perfect order, such an absolute chaos as he found British fruit description and nomenclature. The exactness of his work in this respect is not yet fully realised.

A Scotchman by birth, he was like so many Scotchmen, of untiring energy and dogged perseverance. A man of transparent honesty of purpose, and of blunt outspoken truthfulness. He hated hypocrisy and sham, whilst his heart was simply overflowing with kindness and gentleness, and sympathy.

He was not like any other man. He had a very marked individuality; a sort of solidity and tenacity of expression, both in word and manner, which was reflected in the picture which he rugged and unadorned. He was not a little of the massive, open, wind-swept, heath-land hills of his own Scotland. No one who ever saw him could possibly forget him, or mistake him for any other; and no one who really knew him but now feels he has not even an old friend to tell of.

Gentlemen, we cannot but mourn for Dr. Hogg; but even whilst we mourn let us not forget to thank God truly for the loss, and for sparing him to us for almost fourscore years.

I beg to propose the following resolution:—

"The Fruit Committee of the Royal Horticultural Society desire to record upon this minutes the personal estimation in which they hold the life and work of the late Dr. Hogg. The Committee recognise with gratitude that Dr. Hogg's life was one of unceasing benefit to the best interests, not only of British pomology, but also of the pomology of the whole world. Wherever fruit is grown for the benefit of mankind, there his name will be remembered. The name of Dr. Hogg be known and honoured. The Committee can find no words to express the greatness of the loss which they in common with all English speaking fruit-growers have sustained by the death of one whom all who knew him held so dearly, and they are forced to his outward fall, with placing upon record their deep sense of the inestimable privilege they have enjoyed in being associated to this Committee for so many years with so kindly and eminent a man."

The members uncovered during Mr. Wilks' speech, and the resolution was accepted in silence.

The competition for flavour in Apples and Pears continues to diminish. In Pears especially was this the case, only two

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

Adiantum, per doz.	6-12-0	Forms, small, doz. ...	1 6-2
Aspidistra, per doz.	12-0-0	— various, doz. ...	5-12-0
— specimen, each	5-0-15	Ficus elastica, each	1-0-7-6
Azaleas, per doz.	18-0-36	Foliage plants, per doz.	12-0-36-0
Cinchonas, per doz.	6-0-10-0	Genistas, per doz.	6-0-10-0
Cyclamens, per doz.	9-12-0	Hyacinths, per doz.	6-12-0
Daffodils, per doz.	6-0-9-0	Hydrangeas, per plant	2-1-0
Dracenas, each	1-0-7-6	Marguerites, p. doz.	8-0-12-0
— various, p. doz.	12-0-24-0	Mignonette, p. doz.	5-0-10-0
Evergreen Shrubs, in variety, doz.	6-0-24-0	Palm, various, ea.	2-0-10-0
Ericas, per doz.	10-0-12-0	— specimens, ea.	10-6-8-4
— byemials, per doz.	10-0-15-0	Spiras, per doz.	6-9-0

ROOS IN THE GARDEN in variety coming very good.

FRUIT.—AVERAGE WHOLESALE PRICES.

Apples, French	3-6-4-0	Melons, Channal	5-0
— Crab, per bush...	3-6-4-0	— Islands, each...	5-0
— Wellingtons, p. sieve	...	Nuts, Ob, per 100 lb.	0-0-7-0
Figs, per doz.	12-15-0	Pears, EasternBeurré (California)ge. cases, 5 doz. doz.	14-10-0
— high quality, per lb.	3-0	— per case	14-10-0
— Gros Colman, selected, p. lb.	3-0-3-6	Pine-apples, St. Michael, each	4-0-7-6
— Gros Colman, 2nd quality, per lb.	2-6-2-9	— Strawberries, per 2nds	2-6-3-0

VEGETABLES.—AVERAGE WHOLESALE PRICES.

Artichokes, Globe, per doz.	2-6-3-0	Peas, ordinary (Channal Islands), per lb.	2-0
— Chinese (Stachybotuberifera), per lb.	0-3	— T. 1 p. h. o. n. s (Channal Islands), per lb.	2-6-3-0
Asparagus, Paris Giant, p. bun.	20-0-30-0	— Kidneys, Fr., per lb.	0-2
— English, per bundle.	4-0-5-0	— per dozen bunches	1-0
Beans, French, p. lb.	10-1-0	Rhubarb (Forced), per doz.	0-8-0-9
— Madras Kidney, per bit. of 8 to 10 lb.	1-0-1-3	Salad, small, per doz. punnets	1-6
Cauliflowers, Cornwall, per crate.	8-0-9-0	— Sea Kale, per punnet, 3 1/2 to 4 lb.	0-9-10
— 2nds, per dozen.	3-0-4-0	Tomatoes, Canary Islands, per case, about 12 lb.	4-0-5-0
Horseradish, English, per bundle	2-6	— Tom (Worthing) per lb.	1-8-1-6
Mint, per bunch	0-6-0-7		
Mushrooms (Indoor) per lb.	0-6-0-7		
Onions, English, p. cwt.	5-6-6-0		

POTATOS.

The miller weather has somewhat checked demand, hence the tone is weaker. Dunbar Maincrop, 75s. to 85s.; do., Saxons, 65s. to 70s.; Lincoln Saxons, 30s. to 65s.; do., Maincrop, 55s. to 70s.; do., Glants, 49s. to 56s. John Bath, Wellington Street, Covent Garden.

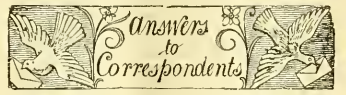
THE WEATHER.

[The term "accumulated temperature" indicates the aggregate amount, as well as the duration, of degrees of temperature above or below 42° Fahr. for the period named; and this combined result is expressed in Day-degrees—a "Day-degree" signifying 1° continued for twenty-four hours, or any other number of degrees for an inversely proportional number of hours.]

DISTRICTS.	TEMPERATURE.		RAINFALL.		SHORT SUN.				
	Above (+) or below (-) the Mean March 20.	Accumulated.	Above 42° for the Week.	Below 42° for the Week.					
0	1	5	23	-12	3 5	54	8 8	12	16
1	1	9	25	-19	9 6	47	5 3	17	18
2	2	33	11	-12	39 4	50	5 5	21	23
3	4	32	8	+8	74 4	51	6 0	33	23
4	3	33	10	-10	62 7	46	7 2	27	21
5	4	34	1	+9	102 5	46	8 5	31	23
6	2	18	10	-22	4 3	48	8 5	18	20
7	2	25	7	+6	41 1	53	6 8	24	18
8	3	32	3	+10	84 6	34	11 3	34	24
9	1	24	13	-24	8 3	55	8 2	20	22
10	2	33	5	+9	1 3	51	9 8	27	26
* 3	4	40	0	+60	56 2	61	10 0	34	24

The districts indicated by number in the first column are the following:—

- 0, Scotland; 1, Principal Wheat-producing Districts—1, Scotland, E.; 2, England, N.E.; 3, England, E.; 4, Midland Counties; 5, England, including London, S.
- Principal Grazing, &c., Districts—6, Scotland, W.; 7, England, N.W.; 8, England, S.W.; 9, Ireland, N.; 10, Ireland, S.; Channel Islands.



BOOKS: A. A., F. M. M. *How to Decorate the Dwelling*, by Annie Hassard, and published in 1875, is sometimes to be picked up at second-hand bookshops for a few pence. It has illustrations of a bygone style of table decorations. A small book by B. C. Saward, price 2s., was published a good many years ago by Mr. Upcott Gilb, Bazaar Office, Strand, W.C. No book that we know of has been written solely on this subject in recent years.—F. B. R. Messrs. Blackie & Sons, Glasgow and London, are the publishers of Thomson's *Gardener's Assistant*, and they are about to issue a new edition of the work, with additions of various kinds, bringing it up to date. You had better wait a short time before buying one.

COMMENCEMENT OF THE SPRING SEASON: *Anxious One*. Astronomically, the season begins with the vernal equinox, March 21; but in this country the season may be said to begin on March 1.

CUCUMBER SOIL AND WORMS: *M. B., Broadstone*. Again there are no worms discovered in box sent.

CYCLAMENS: *E. M.* Your flowers are very good in size and colour. No. 2 is an excellent dark-coloured variety.

GARDENIA GRANDIFLORA: *A. Parry*. Exceedingly large blooms. Bottom-heat is not necessary in the cultivation of Gardenias, as you justly remark.

HYACINTHS: *D. M.* There is not the slightest sign of fungoid disease, and microscopic examination has not enabled me to suggest any other cause. *G. Massee*.

INSECT: *Elmore*. We have received from the highest authority in such matters the following note:—"It is an immature male *Gnatus*. I think *G. Craspeus*; the more your friend has of them the better for him, it is beneficial, not injurious. It is a predatory creature, which was probably feeding upon something that is injurious—it very likely has come from your correspondent's hot-beds. *A. D. M.*"

MAIZE: *A. M. O.* There are a few varieties of Maize which in good years ripen in the southern parts of this country, but not as field crops, rather as inhabitants of favoured spots in sheltered gardens; but, as its ripening cannot be relied upon with certainty, the plant has no commercial value whatever. As an ornamental flowering plant it is of use in border and beds as a foil to flowering plants, and this seems to be its proper use in this country. In the kitchen as a cooked vegetable it does not seem to make any headway. Although the "milky" ones are very nice eating. It is, we suppose, because of the abundance of superior kinds of vegetables at the season when Maize is obtainable that we have not "taken it to." We should be glad to know the results of Carters' trials in their seed grounds at Mortlake. During last season there was much correspondence in these pages upon the subject.

NAMES OF PLANTS: Correspondents not answered in this issue are requested to be so good as to consult the following number.—*F. T. Leighton*. A very fine variety of *Dendrobium nobile* of the large-flowered type, often seen among recent importations. The production of the flower-spikes on *Cyclops cristata* in the manner described sometimes takes place in unusually well-grown plants.—*S. S. Cattleya guttata* Prinzii, more generally known in gardens as *C. amethystoglossa*.—*G. L., Barnet*. The variety of *Dendrobium nobile* is a very fine one of the *D. nobile elegans* class. The *D. Wardianum* obtained from Messrs. John Cowan & Co., is a very large and distinct form, the rose-pink tips to each segment being a very distinct feature.—*R. N. H. Oncidium Marshallianum*.—*W. T., Esher*. 1, *Forsythia suspensa*; 2, *Palmouria officinarum*.—*G. D., co. Waterford*. 1, *Pernettya mucronata*; 2, *Buxus variegata* (variegated Box); 3, *Goldfishia*

isophylla; 4, *Anemone nemorosa*; 5, *Corydalis cava*; 6, *Sanguinaria canadensis* (Bloodroot); 7, *Berberis Darwinii*.—*H. G., Southampton*. 1, *Selaginella denticulata*; 2 and 3, *Campanulas*—send in flower; 4, *Lachenalia tricolor*; 5, a *Polygonum*, for specific name, seed in flower; 6, *Clematis integrifolia*; 7, *Alonsoa inodora*.—*J. W.* *Ondoglossum tripartitum*.—*W.* *Woodwardia radicans cristata*.—*J. P.* *Dendrobium fimbriatum*.—*W. S.* *Narcissus Tazetta*, *Polyanthus Narcissus*.—*H. G.* A very fine variety of *Cypripedium Bozali*; the carrying of a twin-flowered inflorescence is more due to good culture than to anything uncommon in the plant; your variety, however, is an exceptionally fine one.—*J. W.* Two species of *Acacia* (*Mimoso* of the trade) are grown in Southern Europe, viz., *A. Farnesiana* and *A. Riepana*.—*W. O. W., Ireland*. 1, *Fyrus japonica*; 2, *Cryptomeria japonica*; 3, *Juniperus excolta*; 4, *Daphne laureola* (Spurge Laurel); 5, *Cryptomeria elegans*.

NARCISSUS, FERN, &c.: *J. H. Mason*. The green tinge seen in the petals is natural to the variety. The Fern is probably *Pteris tremula*; but why send such a scrap? Unless the dung be very well decayed, it is totally unsuitable to mix with soil used in potting Ferns, and then only in a small proportion to the other ingredients of the compost.

PERFUME PLANTS TO GROW IN THIS COUNTRY; AND TOMATOES: *S. H. W.* *Melissa officinalis* (Balm), *Carum Carui* (Caraway), *Sambucus nigra* (Elder), for its flowers; *Acorus Calamus* (Sweet Flag), *Foeniculum vulgare* (Fennel), *Pelargonium capitatum* (Sweet-scented Geranium), *Prunus Laurocerasus* (common Laurel), *Lavandula vera* (Lavender), *Origanum majorana* (Marjorina), *Rosella odorata* (Mignonette), *Rosmarinus officinalis* (Rosemary). For varieties of Tomatoes, consult a seedsmen's catalogue.

SOIL CONSTITUENTS AND MANURES: *H. J. J.* It would take us too far to tell you what all of the plants you mention contain, or of which an analysis would tell us they consist. They are built up by what they find in the soil, and to a greater degree of perfection when the particular elements needed are put within the reach of their roots. The soil, roughly speaking, contains lime, soda, nitric acid, magnesia, potash, phosphoric acid, and sulphuric acid. What the cultivator has to put into his land is potash, nitric acid, and phosphoric acid, because the available stores of these ingredients are soonest exhausted by continuous cropping of the land; and the only one of these three which is lost if his plants do not use it is nitric acid—the rest others remain in the soil. Sulphate of ammonia is used instead of nitrate of soda to supply nitrogen to the crops; but it is dearer, and must be turned into nitric acid in the soil before it is a fit food for plants. None of these substances should be used alone, but a manure rich in phosphates should be used also; and in a small way you will find farmyard or horse-manure from stables where the animals' bedding is not very frequently changed, and phosphate of lime and old mortar as good as anything that you can use for the plants you name, excepting the Beans, which should have no nitrate of soda, and not much dung; and the Strawberries, which are plants that benefit greatly from applications of potash. Only an analysis of the soil of your garden will tell you what artificial manures it most stands in need of.

COMMUNICATIONS RECEIVED.—*T. G.*—*Abele Fairair*.—*G. C.*, Chislehurst.—*G. C.*, Newmarket.—*W. H. B.* (next week).—*F. D. Haage*, Eynshford. *J. M. H.*—*Dobbie & Co.*—*H. M.*—*F. V. A.*—*G. A. B. G.*—*H. M.*—*A. P.*—*Messrs. Carter & Co.*—*Messrs. B. S. Williams & Son*.—*W. T. B.*

CONTINUED LARGE INCREASE in the CIRCULATION OF THE "GARDENERS' CHRONICLE."

IMPORTANT TO ADVERTISERS.—The Publisher has the satisfaction of announcing that the circulation of the "Gardeners' Chronicle" has, since the reduction in the price of the paper,

Increased to the extent of more than 90 per cent., and that it continues to increase weekly.

Advertisers are reminded that the "Chronicle" circulates among COUNTRY GENTLEMEN, and ALL CLASSES OF GARDENERS and GARDEN-LOVERS at home, that it has a specially large FOREIGN and COLONIAL CIRCULATION, and that it is preserved for reference in all the principal Libraries.



THE
Gardeners' Chronicle.

SATURDAY, APRIL 3, 1897.

THE SPECIES OF THUYA.

WE are all agreed as to the beauty and utility of the several species of *Thuya*. As isolated specimens, as shelters, as hedges, even in one case, as to their value as timber-trees, we are all pretty much of one mind. When we come to nomenclature—*surgit aliquid amari*, as usual. But the bitter is not in this case very intense, nor is there much of it, and we think we can get rid of some of it altogether. There are not many species, to begin with.

In the eastern States of America and Canada, from Nova Scotia to Southern Virginia, according to Sargent, one—*Thuya occidentalis*—is found plentifully, frequently covering great areas of springy swamp-land, which it covers with nearly impenetrable forests, and occupying the rocky banks of streams, where its roots can obtain an abundant supply of moisture. The south does not suit it so well, the trees becoming less abundant and smaller in those regions. Its furthest north-west limit (we are taking these details from Sargent's *Silva*, just issued) is on the shores of Cedar-lake, near the mouth of the Saskatchewan, in lat. 53° 30' (Cochrane, cited by Macoun).

A second species is *Thuya gigantea*, so-called. This occurs on the Pacific side of the continent from the coast region of Alaska (Meehan), through British Columbia, Washington, Oregon, and the Californian coast region. Inland it penetrates to the mountains of British Columbia, and to the western slopes of the rocky mountains in Montana.

A third species is a native of the mountains of Japan, and is best known as *Thuya Standishii*, being really *T. japonica*.

A fourth form, for we dare not call it species, is that cultivated in British gardens as *T. plicata*, which is as we believe more correctly, *T. occidentalis*, variety *plicata*.

A variety called *T. Wareana* is very like the last named, but is even more handsome; other seedling variations are very numerous, but these, for our present purpose, we may pass by with mere incidental mention, nor do we intend to say anything here about the eastern *Arbor-vitæ* (*or Biota*) and its numerous variations.

T. OCCIDENTALIS.—Reverting to the first on our list, *T. occidentalis*, it is not necessary to give a detailed description. That may be found in almost all the text-books. It was the first, or one of the first, North American trees introduced into Europe, the first account of it having been published by Belon (*Arb. Conif.*, 1558).

Mr. Smith has drawn to scale, and with the greatest care, illustrations of the cultivated forms, which will, we hope, make the distinctions more apparent (figs. 67, 68). Notice,

for instance, the regular way in which the branches divide into their ultimate flattish ramifications, nearly equal in length from the base to apex of the shoot; the older leaves, especially the median pairs, are relatively flat and rounded, like so many little coins, and with a large glob or resin-gland beneath the apex. The cones are from 10 to 12 mill. long, ovate-oblong, some erect, others nodding; the scales at least six, of which four are fertile, linear-oblong, with a minute hook-like process on the back below the apex. The seeds are about 2 mm. long, deeply winged.

Our native specimens are from Niagara; for cultivated ones we are indebted to the Botanic Gardens of Kew, Cambridge, Mr. Herrin, Mr. A. D. Webster, and many other friends.

As we have said, we do not propose to say anything at present about the very numerous

fast, that we can but highly recommend it, not only for ornamental purposes, but for economic use. We have not as yet heard of any serious foe or malady to which it is subject, but there may be such; and we shall have to chronicle them when they do come.

“Considering the varied uses to which *Thuya gigantea* is put, it might well be styled ‘the Bamboo of the North-western Indians.’” The bark is woven into mats, embroidered into lozenge-shaped spaces and borders, with bark of a darker colour, stained by steeping it in a mixture of oil, charcoal, and water. These mats are used in a variety of aboriginal modes of existence, and the manufacture is a marked feature in their domestic economy. The bark teased out is woven into blankets and cloaks, and used for gun-wadding. The wood splits easily, and forms boards for their lodges, and the trunks are hollowed out into their beautiful canoes. The twigs are so tough as to be used as withes to sew together the



FIG. 67.—*THUYA OCCIDENTALIS*.

Real size; foliage magnified twice. The section across a branchlet and two leaves is magnified four times.

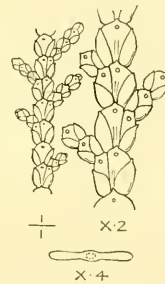


FIG. 68.—*T. OCCIDENTALIS*.

Young branches showing flattened roundish leaves.

variations from the type, except in the case of that known as *plicata*, and even of that we shall defer further mention till we have dealt with the next species.

THUYA Plicata is also too well known to need detailed description, as under the name of *Thuya gigantea* or *Lobbiana* it is now widely distributed. The mode of branching is similar to that of *T. occidentalis*; the leaves are less markedly glandular than in *T. occidentalis*, and are more brightly shining, oblong, rounded, markedly acuminate, or deltoid acuminate, and not so flattened and disc-like, but varying in form according as they are placed on a fast or a slow-growing shoot. The cones are more generally pendulous, 15 mill. long (figs. 69, 70, 71, on p. 215).

This is one of the loftiest and most useful of trees in N. America, although the wood is soft and light; and it grows so well here in most situations, is so handsome, and makes timber so

detached pieces of the canoe, as well as to bind the boards of the lodges to the upright posts. The leaves are even smoked in times of Tobacco famine. The bark is often used to roof temporary houses, and is a common material for canoe-scoops. The wood is almost indestructible underground, and it is extensively used in the construction of pickets or other works in which durability is required in the earth. It might be used much in railway sleepers, and, being, very light, might be easily wrought for window-sashes, doors, &c. It is one of the most beautiful trees in North-west America, and ought to be extensively planted in England.” (Mr. Robert Brown’s remarks as to the economic uses of *Conifera*, &c., made before the Edinburgh Botanical Society, April 9, reported in the *Journal of Botany*, vol. vi, 1868, p. 192.)

And this brings us back to the application of the name *plicata*. The history of this name is confused, but not uninteresting. A summary of it was given in our number for February 13, 1897, so that we need not here repeat the details. James Donn of Cam-

bridge, and David Dou of the Lambertian Herbarium, have got very much confused over the plant. David Don, who published the first description of the plant in Lambert's *Pinctum*, folio edition (vol. ii., 1824), attributes the name *T. plicata* to James Donn, citing the sixth edition of Donn's *Catalogue*, p. 249. He might have gone back to the fourth edition, where the name occurs for the first time, not being present in the earlier editions. Being unaccompanied by any description, Donn's name is a *nomen nudum*. On this account we need not cite James Donn, as the species *plicata* must be attributed to David Don. The original specimen, gathered by Née, is in the British Museum. The history of Née has been alluded to previously (February 13, 1897). To the specimen is attached an inscription, which Mr. Britten has been kind enough to identify for us as being in the handwriting of David Don. It runs thus—"T. plicata, Noh." This then is the type-specimen of *T. plicata*, D. Don in Lambert's *Pinus*.

The ascription of the species to New Spain seems to have been made in error, on the one hand no subsequent traveller has found the plant in Mexico; whilst on the other hand, Menzies found the same plant about the same time in Nootka Sound, and there are three or four specimens gathered by Menzies, Nelson, and Richardson in the herbarium of the British Museum. A comparison of these specimens with specimens of what is now known as *T. gigantea*, leaves no doubt whatever that they all belong to the same species, and that species, according to botanical usage, should be called *T. plicata*, D. Don. In gardens it may still be called *T. gigantea*, Hort., or Lohb's *Thuya*.

One point remains to be cleared up: where are the cultivated specimens of *T. plicata* which apparently existed under that name in the early part of the century? David Don alludes to "cultivated" samples, and James Donn includes them in his catalogue. The Cambridge Botanic Garden of those days exists no more, and Mr. Lynch tells me there is no old tree of *T. plicata* in the present garden; nor is there one at Kew.

Somewhere one would think there must be such a specimen. If not, it was very soon lost, for we find Loudon in his *Arboretum*, p. 2458, mentioning plants in the Horticultural Society's garden, at Messrs. Loddiges, and elsewhere about London, which plants had every appearance of being only varieties of *T. occidentalis*. *M. T. M.*

(To be continued).

NEW OR NOTEWORTHY PLANTS.

GALANTHUS CILICIGUS, Baker.*

My description of this new Snowdrop was drawn up from living plants sent to me by Mr. T. S. Ware, on January 7 of the present year. It was supposed to be *G. Fosteri*, but differs from that species by its less robust habit, much narrower leaves, narrowed gradually from the middle to a very narrow base, and by the want of the large green blotch over the lower half of the back of the inner segments of the perianth, which *Fosteri* has, in common with *Elwesii*.

I have just received dried specimens from Herr Karl Siegesmund, of Berlin, collected by Herr Walter Siebe on the Cilician Taurus in 1896, at an elevation of 560 metres above sea-level, with a note that it flowers from November to March. *G. Fosteri* is a native of the province of Sirwas, in north-eastern Asia Minor. The absence or presence of a green blotch over the lower part of the back of the inner segments of the perianth is, I believe, a constant characteristic, and it divides the spring Snowdrops in two groups, in one of which are *nivalis* and *cilicigus*, and in the other *Elwesii* and *Fosteri*.

Bulb ovoid, $\frac{1}{2}$ inch in diameter; outer tunica

* *Galanthus cilicigus*, Baker.—Bulbo ovoidato, spatula basali elongata; foliis 2-3 anguste linearibus pinnis viridibus; ovario turbinateo; perianthii segmentis exterioribus oblongis in angulato medio-basali facie convexis, segmentis interioribus obovato emarginatis apice parum reflexis et crenatis dorso macula viridi in apicali hypocaustiformi solam præditis, antheris apiculatis.

brown; basal spathe [reaching a length of 3 inches. Leaves 2 to 3, bright green, flat, narrowly linear, reaching a length of 5 to 6 inches at the flowering season, and a breadth of less than half an inch, narrowed gradually from the middle to a very narrow base; edge not recurved; back whitish. Peduncle as long as the leaves; spathe-valve lanceolate, under an inch long; pedicel short, ceriseous. Ovary turbinate, $\frac{1}{2}$ to $\frac{3}{4}$ inch in diameter; outer segments of the perianth oblong, concave on the face, $\frac{3}{4}$ inch long, $\frac{1}{2}$ to $\frac{3}{4}$ inch broad; inner segments of the perianth half as long as the outer, obovate-cuneate, emarginate, rather reflexed and crenulate at the apex, with only the apical horse-shoe shaped green blotch round the sinus. Anthers elongated, reaching rather more than half-way up the inner segments. *J. G. Baker.*

WHY ORCHARD TREES STOP BEARING.

ONE has but to examine the foliage of almost any of our fruit trees in midsummer to discover that something is really necessary to the welfare of fruit-producers. The leaves are the lungs of the plant, and without favourable facilities for breathing—so to speak—the growth and vigour of the tree will be retarded. It takes two seasons to produce the fruit of an Apple, a Pear, or a Plum. The first year the buds are formed and matured; the next year these buds after expanding into blossoms in the spring, are developed into fruit during the summer and autumn. A certain amount of energy is required that the blossom-buds may be formed, and this, doubtless, often accounts for the alternate heavy and light crops of fruit on particular trees. The strength of the tree is required to mature the fruit, and the fruit-buds for another year are not formed, and only a small growth of new wood is produced. The healthy tree when resting a year regains its vigour, forms new buds, and is prepared to raise a crop of fruit the following season, to say nothing of having matured a fair growth of wood. A tree that is suffering from the devastation caused by insects, or from starvation, can no more mature a full crop of healthy buds to bloom the succeeding spring, than the tree that is loaded with a heavy crop of maturing fruit.

In the first place, it may be remarked that fruit trees should not be planted so thickly that sunlight is excluded from any portion of the foliage or of the fruit. Trees are frequently starved both for available food and a sufficiency of sunlight. Sometimes heavy doses of farmyard manure or compost are applied to orchards, but it may be observed that an excess of nitrogenous manure, of whatever kind, causes a rank, soft, long-jointed wood growth; while the trees, to produce fruit, should have short-jointed, solid, well-ripened wood.

To improve our orchards for fruit-bearing, it would be advisable to carefully cultivate the soil both under and around the trees, to apply chemical fertilisers supplying abundance of phosphoric acid and potash, and then to sow Clover. A crop of Clover would be obtained, which could be either fed off by sheep, or cut for hay; the roots of the Clover and stubble should then be ploughed under, which would yield by its decomposition available plant-food that could not fail but show itself in the future fruit crops. *J. J. Willis, Harpenden.*

THE FURNISHING OF CONSERVATORIES.

I was lately asked the following question, "Which is the best way to furnish a conservatory, by keeping the plants in pots, or by planting them out?" When the structure is of adequate dimensions to accommodate large plants, I think there are decided advantages in the planting-out system. Not only can a more natural effect be secured than is the case when plants in pots are exclusively used, but the plants may be preserved in perfect health with less labour. The conservatory, or winter garden, is most valuable when attached to, or in close proximity to the mansion, where, if artificially lighted, it may

be conveniently visited after dinner. It is necessary for the comfort of visitors that a warm temperature be maintained, and consequently plants that adapt themselves to this condition should be employed.

Many of the Palms lend themselves to this purpose, and the Kentias in particular are exceedingly handsome, *K. Fosteriana* and *K. Belmoreana* being the best, the latter is especially elegant, its fronds arch more, and are less spreading than those of the former. *K. Macarthurii* also makes a fine specimen, but is less elegant in appearance. The same remarks apply also to *Scaevola elegans*, *Hyophorbe (Arecia) Baueri*, and *H. Verschaffeltii*. *Hyophorbe lutescens* is a graceful Palm, which thrives well when planted out, although it is somewhat impatient of a low temperature. *Cocos plumosa* and *Calamus plumosus*, the latter having its slender stems and the ribs of its fronds beset with strong spines, answer to this treatment equally well, as does *Caryota urens* (the Wine Palm), which possesses a distinct appearance to any of the foregoing. Then, as a dense and rather dwarf-growing species, nothing is better than *Raphis flabelliformis*. Many others might be enumerated, but I prefer to confine these remarks to those that do well here. Such robust growers as *Sabal Blackburiana*, *Phoenix dactylifera*, and *Livistona chinensis* are too large for houses of ordinary size; while *Cocos Weddelliana*, *Geonoma gracilis*, and *Euterpe edulis* appear to be too delicate to succeed satisfactorily under this mode of culture.

From amongst other suitable plants the Musus must not be omitted, as these are ornamental, and very distinct in character from most other plants. Several of these, however, on account of quickly reaching a great height, cannot be well utilised except in lofty houses. *M. Essete*, *M. paradisiaca*, *M. superba*, and *M. zebrina* are some of the best; *M. Cavendishii* and *M. coccinea* being good dwarf species. *Dracynas* (Dracenas) that may with advantage be employed in this way, *Draco*, *rubra*, *congesta*, *stricta*, *indivisa*, *fragrans*, and *f. Lindenii* should be included, although the last-named looses much of its beautiful colour when thus treated. *Aralia leptophylla* forms a fine object, and there are specimens here which when planted eight years ago were 3 feet high, but are now 20 feet in height, and have leaves 3 feet in diameter, with footstalks 4 feet long. *Brexia chrysophylla* grows equally free, but, like the *Aralia*, is not often cultivated in this manner. *Ficus elastica* and *F. e. albo variegata* are also useful, although, owing to the robust nature of the former, more than ordinary care must be exercised in finding a position for it. *Coffea arabica* is another desirable subject; its glossy foliage affords variety, and its fruit creates interest.

The following plants answer the purpose of filling open spaces beneath the taller plants, and can be easily replaced where it is found to be necessary:—*Curculigo recurvata*, *C. r. variegata*, *Aspidistra lurida variegata*, *Cordylina (Dracena) norwoodensis*, *terminalis*, &c.; *Monstera deliciosa*, *Pandanus utilis*, *P. javanicus*, *P. Veitchii*, *Zebrina (Tradescantia) pendula*, and some of the *Begonias*, *Ferns*, and *Selaginellas*.

I cannot find *Calamus plumosus* in any horticultural dictionary, but I believe it was introduced by Mr. Bull, of Chelsea, some twelve years ago; at any rate, we have an elegant Palm, which we received under the above name from a leading nursery firm. *Thos. Coomber, The Hendre Gardens.*

METHODS OF PROPAGATION.

(Continued from p. 132.)

ORNAMENTAL AND FOREST TREES FROM SEEDS.—Though, perhaps, more in the province of the forester than of the gardener, in small estates, the head-gardener has often the care of the woods and forests plantations; therefore, "Experience" will have a few words to say about this very important matter. As most of the trees which adorn add value to our forests and woods are indigenous, the accepted method of raising is from seed. In the majority of cases, this requires no preparation previous to committing to the earth, but some are best prepared for this. Of the first, the most familiar is the Oak, which has

three British varieties, the peduncled-fruited being the most common, the sessile-flowered the next, and the Durmast—*Q. pubescens*—the least common. This has peduncled fruit, and seems to be intermediate between the other two. All three kinds are included under the name of "*Quercus robur*," in many books simply treating of forestry.

The most rapid grower, and the most widely distributed of the three, is *Q. pedunculata*, but the wood is paler in colour, and not so hard and durable as that of *Q. sessiliflora*, while *Q. pubescens* does not make a large timber-tree, and as it is generally found in damp boggy situations, may perhaps be the kind which furnishes the black wood used in cabinet work, and known as Bog Oak. The Acorns should be collected when they begin to drop, but must be allowed to thoroughly dry before storing, or they are apt to germinate prematurely, and thus become spoiled.

At the end of February, or early in March, draw drills in a sheltered piece of ground, about 4 inches

other barks. The Oak, standing singly, makes a noble tree for park or paddock. The timber is most valuable; while it may be grown in woods and coppices as an underwood stock, and will thrive in cold, clayey soils, where other trees but languish.

Another useful and most beautiful indigenous tree is the Beech (*Fagus sylvatica*), and this is raised in nurseries from its nuts or mast. In ancient times, when Britain was almost all covered with forest, the Beech-mast formed the food of the poor people, as well as innumerable swine, which roamed through the woodlands in an almost wild state, feeding on this fattening food, and also on acorns. On the Continent the poor peasantry collect the shed leaves of the Beech, and drying them carefully, stuff their palliasses with them, in lieu of straw. For this they are well adapted, being clean, elastic, and sweet smelling. The Beech-mast is collected when it falls in October, and is spread to dry in an airy place, and then keeps good and fresh till wanted. It is

crest in search of birds' nests, as though they had been brick walls. Mixed with Privet in the proportion of two to one, it forms a fine fence, but it is too shady for meadows or arable land.

(To be continued.)

BOTANICAL SURVEY OF THE CŒUR D'ALÈNE MOUNTAINS IN IDAHO.

THE Division of Botany of the United States Department of Agriculture has just issued a most instructive report on a Botanical Survey of the Cœur d'Alène Mountains in Idaho during the summer of 1895, by John B. Leiber. As this region is heavily timbered, the economic part of the report necessarily deals largely with trees. Mr. Leiber has lived in Northern Idaho for about ten years, and during this period has often visited the Cœur d'Alènes, sometimes remaining there for several



FIG. 69.—*THUYA Plicata* (DON, IN LAMBERT) = *T. GIgantea* (HORT.).
Leaves magn. two diam.; cross-section four diam. (See p. 213.)

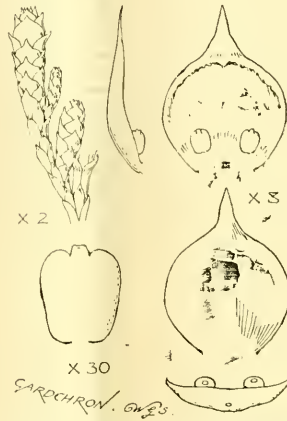


FIG. 70.—*THUYA Plicata* (GIGANTEA, HORT.).
To the left above, young female cones; to the right above, inner surface of scale with two ovules; to the left below, seed mass, thirty diam.; to the right, outer surface of scale, and section through scale and ovules. (See p. 213.)



FIG. 71.—*THUYA Plicata*.
Native specimens. (See p. 213.)

deep and 9 inches apart, and sow the Acorns in this, leaving about 2 inches from nut to nut, cover in lightly, and then tread along the top of the ridge, so as to make the soil firm around the seed. When the plunnie pushes above the soil, rooks and field-mice will give a little trouble. The former must be scared away, and the latter trapped by methods which are well known to most gardeners.

The young seedlings may be left in the bed till they are two years old, when they had better be shifted into the nursery quarters, where they may rest till they are from 5 to 6 feet high, requiring only to be cultivated between to cause them to make plenty of fine root-fibres, and so not be injured by their removal when finally planted out in park or forest. Generally twice as many or more are planted in a given area than are intended to stand, half being afterwards felled, and called by timber merchants "*Black-riuds*," these furnishing small but useful timber for many purposes. If felled in April or May, the bark may be peeled off with facility, and is then most valuable to the tanner, as at this period it is rich in tannin, the active and useful principle in Oak and

usually sown in broad drills, about the same time as the acorn, but may be sown more thickly, even broadcast; but drills are recommended, as the plan facilitates cultivation, and keeping free from weeds. I recommend somewhat deep sowing in March, as the nuts then soon germinate, and consequently the young plants get away from their enemies, for in addition to those that attack the acorns, the whole of the Corvidæ, from the raven to the jackdaw, and notably the handsome jay, as well as starlings, are very fond of Beech-mast, and the deep sowing is somewhat protective. If the soil of your seed-bed is light, the young seedlings will make plenty of root-fibre, and may be lifted and quartered out the year after raising. Beech, from the fact that the leaves are retained till pushed off by the coming young ones in the spring, make a capital sheltering hedge, where one is required to protect tender Coniferae, *Rhododendrons*, or other half-hardy shrubs, and it is therefore used largely in nurseries, both here and on the continent, to form shelter for stool-beds. I well remember hedges of this character which were so dense and rigid, that as a boy I have walked along their

mouths at a time. His report, therefore, is the result of a large amount of observation and experience.

The discussion of the mineral resources of the region is pretty fully given, in order to show the scope and importance of the mining industries of this part of the country. Climate is dealt with in considerable detail, as in case of a future selection of any portion of this region for timber reservations, all possible knowledge of its climatic conditions will be valuable.

The report shows that the region is one of extremely heavy rainfall, compared with that of other localities so far from the Pacific coast; and that in consequence of this rainfall, an extensive growth of timber covers most of the region. The agriculture of the country amounts to almost nothing, and is confined chiefly to grazing.

One of the principal practical lessons brought out in the report is the extent to which forest destruction may be carried in the absence of any efficient legal or commercial check. The era of forest fires began in the earlier period of immigration, followed

by the destruction incident to the building of the Northern Pacific Railroad, and in very recent times by the unparalleled devastation connected with the mining industry.

The report closes with suggestions for a system of timber protection, drawn from the experience of Mr. Leiberger of the region, the people, and of the local industries.

There is much valuable information for those of your readers interested in that country. *J. J. Willis, Herpenden.*

CULTURAL MEMORANDA.

CORREAS.

THE genus *Correa* was named after Jose Francisco Corre de Serra, 1750—1823, a learned Portuguese, who published several treatises on plant physiology, and consists of evergreen shrubs amenable to greenhouse culture in this country. A few of the best varieties are *C. cardinalis*, *C. magnifica*, *C. rosea superba*, *C. virens*, *C. bicolor*, and *C. pulchella*. If well managed, few plants flower more profusely or continuously than *Correas*, or are less subject to mildew. The plants may be struck from cuttings; but by employing *C. alba* as a stock, plants are more quickly grown from grafts, and specimens for exhibition produced in less time than cuttings would require to reach the same size. If a few plants only are required, it is better to buy them from a nursery, choosing healthy plants, well furnished at the base with shoots. If procured in the spring, and they are standing in small pots, repeat them in the present month or in April, affording pots which are larger by 1 to 2 inches in diameter. The compost used in potting should consist of fibrous peat (not the hard kind), broken into pieces sufficiently small to drop between the ball and the side of the pots, adding silver-sand in sufficient quantities to make it porous. The repotted plants should be kept close for a few days. Whilst growth is active, they should be kept well supplied with water at the roots, syringing them overhead on bright days in the afternoon, and the ventilators closed before the sun is off the glass, but affording a little air for the night late in the evening. Plants which have flowered should be kept moderately dry for two or three weeks; and shoots which have borne flowers shortened somewhat, leaving a well-shapen plant. I always place the *Correas* in the winter season in a light greenhouse having a night temperature of 40°. *J. H. C. S., Cheshire.*

ASTERS, STOCKS, AND ZINNIAS.

It is not prudent to sow the seeds of these plants too early, there being oftentimes a risk of the young plants being injuriously checked by being shifted from one place to another during the length of time that elapses before they are planted out-of-doors in May and June. Once checked, the plants seldom grow with freedom or flower satisfactorily. In the south, the first or second week in April is quite soon enough to sow for bedding-out purposes, and the plants thrive more satisfactorily than when seed is sown earlier. If but a few plants are required, seed should be sown in well-crowded pots or pans in a mixture of moderately light soil made firm by the hands, and brought to within half-an-inch of the rim. The seed should be scattered thinly, and very lightly covered with soil, which should be pressed smooth, and then afforded water. One of the worst foes to the young seedlings is damping, which must be avoided by affording water in the morning only, and then only to those seed-pots that really need it. When a few true leaves are made, then prick off the seedlings at 2 inches apart in boxes or frames. Keep them rather close and shaded till they have recovered the removal, when more air should be admitted. It is important not to coddle these plants, but to grow them on gently and sturdily; and where a very large number is required, there is no better method than sowing in rows, thinly, on a mild hot-bed under a garden-frame. For later sowing, no bottom-heat is wanted, and disused Violet-frames answer well if the soil be lightly pricked up with a fork,

moistened thoroughly, and then afforded a dressing of suitable compost; the frames should be kept close, and shaded from bright sunshine till the seed begins to grow. Air should then be sparingly admitted for a time, and in a manner not to injure the seedlings by draughts. In cold weather, such frames should be covered at night. If seeds be thinly sown on these beds, no pricking-off is necessary, but they may go direct from the bed to the open border in cloudy weather. The *Zinnias* require a rich and deeply-worked soil, and considerable quantities of water in dry weather, and occasionally an application of manure-water. *H. Markham.*

FORESTRY.

THE VALUE OF WILLOW TIMBER.

WITH the greatly increased interest that has of late years been taken in our national game of cricket, the demand for Willow timber suitable for bat-making has, in consequence, been correspondingly great—indeed, at the present time it far exceeds the supply. This should be welcome news to those who are troubled about the agricultural depression at present prevailing, as on almost every country estate there are tracts of dampish ground suitable for the growth of Willows, but which are of little value for agricultural purposes. When we consider, too, that good "maiden" (unpollarded) Willow timber fetches readily 2s. 6d. per foot, that young plants are comparatively cheap, that the tree can be grown in damp lands where few other species succeed, and that it arrives quicker at maturity than most other timbers, no excuse need be offered for bringing the planting of the Willow prominently under notice. Probably no other tree receives or has received so small a share of attention as the pollarded Willow; while certainly no other can bear, without apparent injury, so much mutilation. The most profitable species of Willow to plant to grow into timber is *Salix alba* (white or Huntingdon), although, for special purposes both the *Bedwood* and *Bedford Willows* (*S. fragilis* and *S. Russelliana*) may be strongly recommended. Even the timber of the *Goat Willow* (*S. caprea*), which, however, rarely attains to the dimensions of the others, finds a ready market for certain purposes, being tough and elastic, with a considerable lateral adhesion. When favourably situated, the growth of these Willows is rapid, and many which I have measured in a plantation had produced fully 40 cubic feet of timber in thirty years. But even this has been far exceeded, as will be seen by referring to the experiments conducted by the Duke of Bedford, where we find that 1½ foot of timber had been produced annually by the Willow for thirty years. In planting the Willow for profitable purposes, close order should be followed; and in one of the most valuable woods of this kind that I have examined, the original plants or cuttings had been placed at 3 feet apart, and not thinned before the shape of the trees became pronounced. The trees took the form of clean, branchless boles with heads not too spreading. Too much subsequent crowding must, however, be avoided, otherwise the trees become unhealthy, rendering necessary a careful and systematic thinning. Regarding the yield of timber per acre, I give the following figures taken from a plantation of thirty-five years' growth, where the soil was a rich, unctuous yellow-loam—far too good to be put under such a crop. The plantation was rather gappy, due, I should say, to careless thinning done at irregular intervals of time, the average distance at which the trees stood apart being about 18 feet, 140 trees thus going to the acre. In order to compute the contents, five fair-sized trees were measured, the average amount of timber being found to be nearly 32 cubic feet; at which rate an acre would produce 4480 feet, which at the reasonable figure of 1s. 6d. gives £336. It must be remembered that the plantation had received many thinnings, but for how much money the timber thus cut out had been sold, or what was the total quantity, no record had been kept. Let us, however, suppose that the value of the previous

cuttings paid the estimated letting value and taxes, cost of planting, and general upholding of the woodland, and we have then left a clear profit of £9 per acre per year—a handsome return from even good Wheatland. But not only for the best class of cricket-bats is Willow timber in demand, but, owing to its teasing rather than splintering, it is largely used for the bottoms and sides of carts and barrows, for the floats of paddle steamers, for breaks on waggons and trucks, and largely for turnery purposes. It is very light for its bulk, tough, easily polished, and, comparatively speaking, incombustible. *A. D. Webster.*

TREES AND SHRUBS.

PRUNUS MUME.

CONSIDERING that this is one of the most popular of flowering trees in Japan, it is strange that it has, until quite a recent date, been almost unknown in European gardens. It belongs to the *Apiriet* section of *Prunus*, and the wood is very like that of the common *Apricot*. The leaves, too, plainly show the affinity with that species, but they can be recognised by the much longer, drawn-out point. The flowers began this year to open about the middle of February, but it is towards the end of March that the general crop appears. They are produced on the leafless wood, much after the fashion of the *Almond*, each flower being about 1 inch across. The colour is rosy-pink, in some forms of so pale a shade as to be almost white, whilst in others it is quite rich and deep. The species has long been a favourite tree with the Japanese, and under their cultivation has varied considerably. Besides the varieties in colour just mentioned, there are others with double flowers, or a pendulous mode of growth. In this country it will be welcomed as an addition to the earliest of spring-flowering, hardy trees—a group that can never become too plentiful.

PRUNUS DAVIDIANA.

In this beautiful tree we have the forerunner of the great host of *Peaches*, *Almonds*, *Cherries*, &c. (now collectively known as *Prunus*), whose flowers during the next two or three months contribute so much to the beauty of English gardens and woodlands. A few of its flowers were open in the middle of January, but the great bulk of them were held back by the short spell of frost. Now, however, a few mild sunny days have brought it fully into bloom, and very lovely it is, especially the white-flowered variety (*alba*), which appears to flower more freely than the deep pink one (*rubra*). Its slender, rather erect branches are now completely wreathed in pure white blossom. It is of Chinese origin, and was first sent to Europe by the Abbé David, a French missionary. It is common in the gardens and roadsides about Peking, and at its flowering season is a most beautiful and conspicuous sight, holding there, apparently, a position in public favour analogous to that of the flowering *Cherry* (*P. pseudocerasus*) in Japan. In this country it ought in time to become as well known and popular as the *Almond*, belonging, as it does, to that small but welcome group of hardy trees and shrubs whose flowers appear soon after New Year's Day, and thus anticipate by several weeks the majority of spring-flowering trees and shrubs. *W. J. B.*

DAPHNE LAUREOLA AND D. MEZERUM.

D. laureola is a native shrub, although somewhat rare in a wild state. It is desirable for shrubberies and similar positions owing to its delicate perfume, which closely resembles that of *D. indica*. The greenish-yellow flowers are freely produced, but are comparatively insignificant; and on warm, moist evenings in February and March, a stranger would be puzzled to know from whence the delightful fragrance proceeded. It has a much more refined scent than that of *D. Mezereum*, and I consider it more penetrating. The flowers are followed by an abundance of bright red berries, which are said to be very poisonous; and for this reason the plant should be kept out of the reach of children.

It is described in Bentham's *British Flora*, dated 1878, as having scentless flowers, and bluish-black berries; this does not agree with my experience, but, as a rule, I find the scent is absent until an hour or two before dusk. It reproduces itself freely from seeds here, and in that respect differs much from *D. Mezerium*, which hitherto has failed, although many plants of it were introduced by the late Mr. Ingram

here, 40 feet long and 10 feet wide, the plants being about 2 feet high, and in full flower on Feb. 24. At such a period of the year it would be difficult to find any hardy plant to equal it for beauty and fragrance. Two distinct shades of red were noticed, one much darker than the other. There is said to be an autumn-flowering variety, but I do not know it. *W. H. Divers, Belvoir Castle Gardens, Grantham.*

of soda is now 29 per ton. Commercial ammonium sulphate contains about 24.5 per cent. of ammonia, this is equal to 20.17 per cent. of nitrogen; commercial nitrate of soda contains about 15.5 per cent. of nitrogen. From these figures, it will be seen that we can buy the same quantity of combined nitrogen in the form of ammonium sulphate for 7s. 9d. as we can for 11s. 7d. in the form of nitrate of soda.

Another point in favour of ammonium sulphate is the ease with which any adulteration can be detected. Pure ammonium sulphate, if placed on a hot iron plate, will be more or less volatilised, the amount of residue left behind is an index of the amount of impurity. The impurities occurring in nitrate of soda are not so readily detected. Both salts are easily soluble in cold water. The effects of each salt are nearly identical upon plants, because ammonium sulphate is changed into nitrate in the soil, and is then absorbed by the crop. Where great leaf-growth is needed, ammonium sulphate is most useful. It gives good results when applied to Cabbage, Leeks, Parsley, Lettuce, Endive, Celery, and Potatoes. It should only be used sparingly for Onions and Turnips, as the bulbs are not enlarged in proportion to the leaf-growth, and they do not keep so well if too liberally treated with ammonium sulphate. Ammonium sulphate is useless for Peas and Beans. No objection can be raised to the employment of a solution of ammonium sulphate for watering salad-plants, as it is a clean salt, whereas the use of filthy liquid-manure for salad-plants is to be condemned as dangerous and nasty. When applied to young plants with tender foliage, or to plants in pots, it is better to use it in dilute solution about two ounces to a gallon of water. One ounce to a square yard is enough for one dressing on the open ground.

For gardens smaller quantities are required than for farms; but even if 9s. per cwt. is charged for this salt, it will be found profitable. Most gasworks now make ammonium sulphate instead of selling the ammoniacal gas liquor. The nitrogen in bone-manures, in guano, in fish-meal, and in the much-advertised mixtures, costs very much more than that in ammonium sulphate.

It must always be borne in mind, however, that it only supplies plants with one important substance, i.e., nitrogen; further, its effects do not persist for more than one season—what the crop does not absorb is washed out of the soil in the form of nitrate by the winter rains. All soils are rendered more fertile by its use. *F. V. Dutton, University College, Bangor.*

TULIPA KAUFMANNIANA.*

This Tulip was discovered by Albert Regel in the mountains of Turkestan, and was described and figured by his late father in the *Gartenflora*. Anyone who compares the original figure with that now given (fig. 72) will be surprised at the astonishing difference which a few years of cultivation have made. The "potentialities" of a flower can indeed rarely be estimated from the wild plant. This Tulip belongs to the woolly-bulbed series, generally with two leaves. The flower-segments are oblong elliptic, or in the cultivated plant, oblong obovate obtuse, variable in colour from pale pink to pale rose-purple.

It was shown at the last meeting of the Royal Horticultural Society, by Messrs. Wallace of Colchester, and Messrs. Barr of Covent Garden.

PLANT NOTES.

ASCLEPIAS CURASSAVICA, Linn.

An attractive, soft-wooded plant, common about the coast districts of Grenada, and a favourite food-plant of the caterpillar of a rather large brownish butterfly, which is known in the local vernacular as "Soldat Martinique"; it is also much frequented by a pretty marked plant-bug. The upper portions of the plant (stems, leaves, and flowering stems), discharge a white fluid when cut. It flowers when a foot or two

* *Tulipa Kaufmanniana*, Regel, *Gartenflora*, 1877 (t. 906).



FIG. 72.—TULIPA KAUFMANNIANA.

at various times. I am now experimenting with it in different soils and situations in order to arrive at the cause of failure, if possible. The figure of Mr. Marshall's fine plant on p. 153 almost made me envious, and I well remember some large plants of the pink and white varieties when I was a boy in Kent. Occasionally, one sees small plants in the cottage gardens in Leicestershire; and lately I saw a bed of seedlings in one of our home nurseries near

AN ECONOMICAL TOP-DRESSING.

THE great fall in the price of ammonium sulphate makes this substance now the cheapest source of nitrogen. Twelve months ago it was quoted at over £12 per ton; to-day, it is offered at £7 17s. 6d. per ton. When it was at the former price, it was more profitable to buy nitrate of soda; the price of nitrate

high, and rarely attains many feet at any time of its existence. The orange-coloured flowers are admired by most people, especially by strangers to the West Indies, and the plant is often mistaken by the casual observer for *Lantana Camara*, Linn., because of the colouring of the flowers, and general habit when the latter-named plant is small. Both plants grow in similar localities, and, in fact, occasionally may be seen growing side by side. Our wild *Lantanas* enjoy with the wild *Crotos* of the colony the same name, i.e., "Wild Sage." In Dicotyledonous plants the natural order *Asclepiadaceae*, to which *Asclepias curassavica* belongs, is the only one that possesses flowers with their stamens and pistils adhering, and such is the case with *Orchidaceae*, in Monocotyledons. The *Asclepiad* under notice would make a desirable bedding plant for tropical flower-beds. Its local name is "Ipecca." *W. E. Broadway, Grenada, March 4.*

THE WEEK'S WORK.

THE ORCHID HOUSES.

By W. H. WAIRE, Orchid Grower, Burford, Dorset.

Odontoglossum.—In this house *Maxillaria grandiflora*, *M. venusta*, *M. picta*, *M. lepidota*, *M. striata grandiflora*, *M. luteo-alba*, *M. tenuifolia*, *M. Amesiana*, *M. praestans*, &c., thrive admirably; and it is now the time when an examination of these plants should be made. If some of them require large pots, or the potting materials are decayed, the present is a suitable season to attend to these matters. The following species of *Maxillaria*, viz., *M. Sanderiana*, *M. fucata*, and *M. Hübschii*, are showing for bloom, and re-potting in their case will have to stand over for the present. *Maxillaria Turneri* and *M. nigrescens* are species that succeed in a cool part of an intermediate-house. All species of *Maxillaria* mentioned above may be cultivated in pots or in shallow pans, three parts filled with crocks, and in a compost consisting of three parts sphagnum-moss, and one part peat. Repotted plants must be shaded from strong sunshine, and afforded only just as much water as will keep life in the sphagnum moss, till such time as growth begins; and when they get well rooted, plenty of water at the root and moisture in the air should be supplied.

In the *Cattleya*-house, plants of *Pleiois maculata*, *P. m. alba*, *P. lagenaria*, *P. precox*, *P. Wallichiana*, and *P. concolor* are growing vigorously, and will require plenty of water at the root, and their immediate surroundings kept decidedly moist. An occasional watering with weak liquid cow-manure will be of great assistance to them. These plants should enjoy the coolest part of the house, and where air can be freely admitted, and scarcely any shade is necessary, unless the sun be very powerful. The cooler-growing varieties—*P. humilis* and *P. Hookeriana*—may be repotted as soon as they pass out of flower. The *Calanthe* compost will suit them admirably. They should be suspended in a light position, close to the roof-glass in the *Odontoglossum*-house.

Temperatures.—The month of April is generally a very troublesome period to the orchid cultivator, owing to the numerous changes in the weather, which make it difficult to maintain regular temperatures in the houses. Still, the most must be done by attention to the heating apparatus, and to shading and ventilation, to avert excessive fluctuations. In such changeable weather it is best to keep the hot-water pipes a trifle warmer than usual, even during the middle of the day, and when the sun becomes suddenly obscured by heavy clouds the ventilators may be closed and an extreme fall in temperature prevented. No further fire-heat will be necessary in the cool-house, unless the temperature of the house is likely to fall below 50°. When the wind is chilly, the proper degree of warmth should be regulated by means of the ventilators. The temperatures of the various divisions as maintained by fire-heat should now be as follows—East Indian-house about 65° through the night. The *Cattleya* and Mexican-houses 60°; Intermediate-house 55° to 60°; *Odontoglossum*-house a trifle above 50°. During the daytime a rise of several degrees above these figures is advisable, and a further increase of 5° or 10° by sun-heat will do good.

Shading.—Owing to the exceptionally dull autumn and winter the foliage of the plants is more tender than usual, and therefore more susceptible to injury

from the sun's rays. For instance, we have a large plant of *Dendrobium Dalhousianum*, which was exposed to plenty of full sunshine throughout the whole of last summer, but during the past week several of its leaves have been severely scorched. The plant is in the same position exactly as it was last year, which proves that the injury was not caused through any flaw in the glass. On that side of the East Indian-house where such plants as *Cypripediums*, *Bolles*, *Phalenopsis*, *Angrecums*, *Aerides*, *Saccolabium*, *Bulbophyllum*, *Cirrhopetalum*, *Phaius*, *Dendrobium Huttoni*, *D. McArthur*, *D. O'Brienianum*, *D. rhodostoma* × *D. tridenum*, *D. porpureum*, *Oncidium Kramerii*, *O. papilio*, *O. ampliatum*, &c., are grown, the blinds should be lowered immediately the sun has sufficient power to raise the temperature 6° or 7°. Where such species are arranged on the lighter side, as *Dendrobiums*, *Catantus*, *Cynoches*, *Mormodes*, *Thunias*, *Schomburgkias*, *Cryptopodium*, *Grammatophyllum*, *Brassavola*, *Renanthera*, and the warmth-loving *Epidendrums*, it is also necessary to use considerable caution. The blinds of the *Cattleya* and intermediate-houses should be left down before the sun has become strong enough to overheat the leaves of the plants. The plants in the Mexican-house enjoy the early morning sunshine, but as the temperature rises by this means, ventilate freely, and when the foliage of the plants become extremely hot to the touch, lightly shade them. When this is likely to produce a rapid fall in the temperature, the ventilation should be reduced. Now that the majority of these so-called Mexican plants are starting to grow, the house should be closed early in the afternoon, including plenty of sun-heat; but thoroughly moisten the floors, stage, &c., at the same time. *Odontoglossums*, *Masdevallias*, *Maxillarias*, *Oncidiums*, and the other occupants of the cool-house, should be shaded on bright mornings immediately the sun has raised the temperature to 55°, and the blinds should not be removed so long as the sun is upon the roof. The roller-blinds that are now used for shading *Orchids* admit plenty of light, so that there is no necessity to keep taking them up and down at every trifling change in the weather, as was necessary when the ordinary canvas-blinds were in use. Therefore, when the weather is changeable, keep the blinds down.

FRUITS UNDER GLASS.

By F. HARRIS, Gardener, Eastnor Castle, Leicestershire.

Strawberries.—British Queen will come on quite fast enough if the plants be put into a cold-frame timely. Let the plants be afforded water early in the morning so as to get the leaves dry before nightfall. This variety sets freely in frames, and if the plants are placed later on a shelf in a cool orchard-house close to the ventilators, the fruit will come of great excellence, and before the early outdoor-varieties begin to ripen. If mildew be observed on any of the plants, dust the foliage with flowers of sulphur, and syringe it off in a day or two afterwards.

Pines.—Plants which showed fruit very early in the year, and are now approaching maturity, will require considerable attention in the matter of water at the root, and putting stakes to the fruit. Liquid-manure, at a temperature of 90°, should be afforded them so long as the fruits remain green; afterwards manure-water should be withheld almost altogether, and clear water only afforded when the soil gets very destitute of moisture. The bottom-heat should be at 85° to 90°; fruiting plants, and top-heat at from 70° to 75° at night, rising 10° by day with fire-heat, closing the fruiting-house early, so as to husband solar-heat, allowing it to rise to 95° or 100°. Afford atmospheric moisture abundantly, damping paths, walls, and the bed between the pots twice or thrice daily. When the fruits begin to ripen, keep the air a little drier. Later fruiters will require similar attention in staking, &c. The best method of supporting a fruit in an erect position is to place two strong stakes on either side, an inch or so from the rim, and pass a strong piece of matting from one stake to the other, with the fruit in the centre, the matting coming round the base of the crown, as the tuft of leaves is called. Suckers, except one, or at the most two, that may be required for keeping up the stock, should be removed before they become large, as well as every growth appearing at the base of the fruit. In removing root suckers, do not give a straight upward pull, which might lift the plant out of the soil, but with a sharp twist detach the sucker without disturbing the plant in the least.

Successions.—If these plants were put into fruiting-pots in February, they will now be making growth.

Let the bottom-heat touch 86°, and no higher. Do not let them get crowded; rather re-arrange the plants, and afford each the utmost amount of space possible, and in doing so keep them well up to the glass by the addition of a little new or old bark, as the case may demand. When affording water, let it be thoroughly done, so as to wet every part of the soil, and let plenty of air into the house whenever the solar heat is powerful and admits of its being done, but avoid draughts—not an easy matter at this season of bright sun and cold winds. Hexagon netting several times folded and hung over openings and ventilators is of use at this season in bringing up volumes of cool air, and rendering it less objectionable to tender plants. It is just as good hung over the back openings of hotbed frames, as over the ventilator and window openings of pineries, peacheries, and vineries. It should be remembered that the ventilation of plants at this season wants the greatest degree of watchfulness on the part of the gardener and his assistants, and that nothing can be left to chance, a few minutes neglect ruining perhaps the work of an entire year. In giving air, always do so gradually, so as not to lower the temperature of a structure all at once; and the same rule should be observed in taking it off.

Suckers.—The February-potted suckers are making roots, and should consequently be afforded water more freely than heretofore, and as they grow allow extra space, otherwise they will become drawn, a condition from which they never wholly recover. The temperature of the pit should range from 60° to 65° at night, and that of the bed about 75°. On very bright days shading will be required by suckers and successions, and a slight overhead sprinkling at closing time; but in this matter the gardener should be guided by local conditions, for what is demanded in one part of the country is uncalled for in another. If the stock of any variety is deemed insufficient and suckers are available, these may be twisted off the parent plants, and in two or three days afterwards potted in 48's and set in the sucker-pit to root.

PLANTS UNDER GLASS.

By G. H. MAYCOCK, Gardener, Luton Hoop Park, Luton.

Paeonies.—Those plants which have been during the winter in cold frames may be removed to a low house or heated pit, in order to avoid the damping-off of the blooms as much as possible. Pieces grafted on roots of *P. officinalis* last year will do best if still allowed to remain in an unheated frame from which frost is excluded. They should be examined, and the growths tied to sticks, taking care in doing this not to twist the scion, or failure to unite may occur.

Paeonia carnea.—This is a winter-flowering plant, not so much cultivated as formerly, but still very useful at that season, the flowers lasting a long time when cut; and the plant when grown in 6-inch pots forming good subjects to place in vases, &c. in the dwelling. If growth for cutting purposes only, or for decorating the stove, a 7 or 8-inch pot should be used. If cuttings be taken the first week in April, and dibbed into a mixture of leaf-mould and sand in equal proportions under a bell-glass, and placed in the propagating-house, they soon form roots. The plant grows in a mixture of one part loam, one part leaf-mould, a small portion of dried cow-dung, with sufficient sand to keep the mass porous. The shoots should be often stopped so as to increase their number, and prevent its inherent tendency to grow tall and lank. They should be kept, when of small size, near to the light in the stove or stove-pit.

Primulas.—Seedlings should be pricked-off into shallow pans filled with a rather light compost of peat, leaf-mould, sand, and loam; and a sowing may be made for succession. The double-flowered varieties of any kind may now be increased by division of the roots; be careful to have a few roots with each piece. Pot-up these divisions in light soil—sphagnum-moss and much sharp sand, and plunge them in a gentle hot-bed till such time as the roots take hold of the soil, then remove them to slightly cooler quarters in a frame similarly to the seedlings of single-flowered species. If double-flowered varieties can be rooted in sphagnum if kept close and moist on mild bottom-heat. The divisions and cuttings, when establishing themselves, should receive water sparingly.

Hints on the Emigration of Plant Houses.—As every gardener knows, no plant can be grown at its best unless kept generally free of those insects which are parasitic upon it, more particularly thrips, aphides of various sorts, and red-spider. That being well understood, the first appearance of these insects

on any plant should warn the gardener of the necessity of his aid at once taking steps to rid the plant of them. It is a far easier matter to destroy the fore-runners than a numerous host; there is, therefore, economy in taking early measures against the enemy. If it is but a few plants, these should be removed to a warm or cold pit, and be there fumigated at a small cost; but if it be a whole house full of plants that have to be dealt with, the house should be kept drier and ventilated to a later hour than usual, and the fumigation commenced after the sun has left the house. If aphids only has to be destroyed, one mild fumigation will suffice to kill all the mature insects, but it should be supplemented with a second one in forty-eight hours, so as to destroy the later hatched brood, tobacco-smoke being useless against the aphid-egg. Thrips, both black and yellow, require from two to three fumigations at intervals of one or two days, and the amount of smoke generated should be denser than is required to kill aphids. I do not advise the immediate syringing of the plants after fumigation, as it tends to revive many of the dying insects.

Winter-flowering Begonias.—Cuttings may now be taken, striking them, one in a 60-pot, on bottom-heat of 80°, in light, rich compost, and putting them on when rooted without loss of time. Aged Begonia plants, which may have been cut down to afford shoots for making cuttings, may be potted in 7-inch pots after a sufficient number of cuttings has been secured. They are useful in the decoration of the conservatory, and supplying bloom for cutting.

General Remarks.—The following seedling plants should be pricked out before becoming crowded in the seed-pots and pans:—Gloxinias, Begonias, Torenia, and Streptocarpus. Cyclamens will require to be potted in thumbs and 69's, keeping them afterwards in a partially-shaded place. Caladiums intended to form large plants should be protected, and afforded for a time a slight amount of shade from bright sunshine. Impatiens Sultani may be increased by means of cuttings. It is an attractive plant when flowered, and the cuttings strike freely in heat at this season. When struck, pot on and keep them in a warm, moist stove-pit, and close the glass, to prevent lanky growth being made.

THE FLOWER GARDEN.

By CHARLES HERRIN, Gardener, Dropmore, Maidenhead.

Sowing Annuals.—Various annuals, such as Stocks, Asters, Zinnias, Phlox Drummondii, Salpiglossis, Galliaris, and others, should be sown forthwith. For raising these on a better medium can be employed than a frame, or frames, placed upon a mild hot bed. Given abundance of fresh leaves, they will answer admirably, and a strong heat is not necessary; a bed to the depth of 3 feet will be ample, the leaves to be well trodden down in the process of making. Work in a little loam manure round the sides, to hold the mass together, and prevent the leaves from pushing out when treading and working upon the bed after it has been made up. After putting on the frames, place a few inches of leaf-mould in the bottom, and on this about 3 inches of light soil that has been passed through a half-inch sieve. The surface of the soil when finished should be within a few inches of the glass. Put the lights on, and leave them for a few days until the soil has settled and become warm. Before sowing, draw out shallow drills, 3 inches apart, and cover the seeds at a depth according to their size. The frames should be kept closed and shaded until the seedlings appear, when the shading should be gradually removed by using it during bright sun for a few days only. Admit air in greater quantities as the seedlings develop, to prevent them becoming stumpy. Zinnias and Galliaris make useful bedding plants, and if the beds are empty in which they are to be planted, they may be lifted carefully from the seed-frame early in May, and planted at once, shading with a few branches for a day or two if the weather be bright. Stocks and Asters may be treated in the same way, or be pricked off into other cold frames or sheltered border as soon as strong enough to handle. The seeds of Salpiglossis are small, and must be covered slightly, and the seedlings be transplanted carefully to the borders, as they are not free-rooting plants.

Calceolarias struck and wintered in cold frames now require to be transplanted, and a bed of soil should be prepared on a hard bottom of coal-ashes, either in cold frames or where protection can be given. The plants should be lifted with a trowel, and re-planted about 4 inches apart each way.

The soil should be loamy, with an admixture of half rotten leaf-soil or old Mushroom-bed manure. They will then be lifted with good balls of soil, when transferred to the flower-beds. Where the latter are now empty, and shelter can be afforded with mats or canvas if necessary, Calceolaria plants may be put into the beds now, and if planted thus early into their permanent quarters, they will become established before hot and dry weather sets in, and consequently they will be less liable to die off during the summer.

Pinus for summer bedding may receive somewhat similar treatment to the above, except that no protection need be afforded. Where these are to form the ground-work of beds during the summer, they should be put out now, if possible, and all flowers be kept pinched off for some time to come. One of the best dark blues for summer flowering is Archie Grant, and a good white will be found in Mrs. Gray.

Gladivus.—All named varieties should be got into the ground now as soon as possible. Where they are to be planted in lines, drills 3 inches in depth may be drawn out, a little sand scattered in, and the corms set out at convenient distances in them. Beds filled with Carnations may have a few corms dotted about in them, and they will give a furnished appearance to the beds after the Carnations have flowered.

THE KITCHEN GARDEN.

By W. POPE, Gardener, Highclere Castle, Newbury.

Celery-sowing and Pricking-out Seedlings.—If seed for the main crop is not yet sown, there should be no further delay in sowing. Sow the seeds thinly, and afford the seed-pans genial warmth to induce speedy germination; but as soon as the plants are through the soil, remove them to cool quarters, and afford them plenty of sunlight and fresh air, and pricking them off when the first true leaf develops. Do not let pricked-off plants, or those still in the seed-pans, lack root-moisture, or suffer from over-crowding at this stage, these often being causes that bring about bolting. A pinch of Celery-seed may be sown on a south border, in order to furnish plants for late and spring uses.

Carrots.—The sowing of the main crop may be made when the weather and state of the ground permit. James's Intermediate is still a favourite Carrot with many gardeners because of its smaller size as compared with the New Intermediate or St. Valery; and, unless exhibition roots are required, it is preferable for general consumption. The new variety is larger, has a better colour, and is a handsome root. The land for this crop should have been well manured for some previous crop, or if it has been recently dressed, the manure should have been placed at the least 1 foot deep. Sow the seeds in drills 15 to 18 inches apart, and 1½ inches in depth, and after covering the seed, and before raking the land, afford it a fair and regular dressing of soot and common agricultural salt. In order to have roots fit for exhibition on heavy land, holes should be made with a long dibber or crowbar to a depth of 15 inches, and the same distance between, filling these with finely-sifted soil, to which a small quantity of fresh soot has been added, pressing it firmly into the holes, and sowing a few seeds in the middle of each. A bed of Sutton's early Gem, or early Nantes Carrots, may be sown at intervals of three weeks till August. The later sowing affording nice roots far into the winter, which, for many purposes, are more useful than large roots. Pay attention to the early sowings in frames, thinning them early from 3 to 6 inches, according to variety, and admitting plenty of air to the frames in mild weather, and not letting the soil get dry.

Turnroot.—A sowing of Egyptian or Turnip-rooted Beet, and one of Pragnell's Exhibition for early consumption, should be made, but do not sow the main crop for several weeks.

Potato Planting.—The planting of the Main Crop and late varieties of Potatoes should be pushed on when the land is dry enough to be workable. If the land is already dug, and in early light and dry, the sets may be inserted in holes made with a blunt-edged dibber, otherwise digging and planting may be done simultaneously—a method generally to be preferred if care be taken to pulverise the soil generally, and not merely the surface. Allow sufficient space for the haulm to develop without undue crowding; and as the strength of the haulm varies in the different varieties, this will have to be considered by the planter. Small growers, as Ashleaf and Sharpe's Victor, may be planted at 24 and 12 inches and

bigger growers at correspondingly wider intervals, the largest being 30 by 24 inches. Medium growers are Windsor Castle, Synnemo, and Sutton's Seedling. If manure is applied when planting, it should be thoroughly rotten, such as that from a spent hot-bed, and is the better if it consists chiefly of tree leaves. This should be spread in the winter, and at planting time a good sprinkling of wood-ashes, dissolved in water, or a Potato-manure be applied, and the dressing repeated before earthing up the plants.

THE HARDY FRUIT GARDEN.

By H. W. WARD, Rayleigh, Essex.

Dealing with Insect Pests.—With the gradual increase in the outside temperature, aphids will seek to attach themselves to the young growths of the Peach, Cherry, and Plum trees, inflicting much damage to the trees if prompt measures are not taken to prevent them. Weakly-growing trees are more subject to the attacks of insects. Sometimes it is the conditions under which the tree's growth is made that predisposes it to insect attacks. It may be that the soil about the roots is not in a condition to promote and maintain strong growth. When the attack is clearly indicated by the leaves becoming curled, it is difficult to dislodge the pests by the application of clean water with a syringe or garden-engine. Hence the necessity of taking remedial measures on the first appearance of either the green or black fly, the latter being the more mischievous, as well as the more difficult of dislodgment. Especially is this so in the case of Cherry-trees, which the black aphid mostly infests, and sometimes to such an extent as to render necessary the dipping of the tops of the shoots in a saucer containing Richards' X.L. ALL Liquid Insecticide, a composition which I have also used with the best possible effect by means of a syringe, in the proportion of one part of it to thirty of water. Another good insecticide is clean water and tobacco-juice, used in the proportion of 1 quart of the latter to 4 gallons of the former.

Grafting of Apples and Pears (in the manner described in the *Gardeners' Chronicle* for February 27, p. 138) may still be done. Examine grafts worked during the past month, and replace the clay round these from which it may have fallen off, filling up at the same time any cracks that the recent parching winds may have caused in the clay round others. In some cases it may be necessary to tie a little fresh moss over the clay in order to preserve it and the graft in an uniformly moist condition by damping it occasionally with water.

Thinning Apricot Fruits.—Where the trees have set heavy crops of fruit, no time should be lost in effecting the necessary thinning. In the case of healthy, vigorous-growing trees, the fruit may be thinned out at once to 6 or 8 inches apart each way. There need be no fear of such trees dropping their fruits during the process of stoning, providing the soil is kept in a properly moist state around the roots.

Strawberry Plantations.—Keep plantations of Strawberries free from weeds, and should dry weather continue, plants growing in light and perhaps shallow soils should receive applications of water at the roots.

THE APIARY.

By EXPERT.

Robbing.—For a few weeks to come great care will be required if signs of robbing are apparent, not only in protecting the particular stocks which may be attacked, but also in preventing the mischief from spreading to other hives; this may be guarded against by carefully observing the movements of the flying bees while inspecting stocks. Should it be seen beyond doubt that robbing is going on, close all hives except the one which is being operated on during the time it is uncovered, not more than five minutes, and when the quilts are replaced, re-open all entrances for a couple of minutes to allow the bees to settle themselves, then close them again, and proceed as before, with the hive furthest away from the first examined. Do not re-confine the bees which have been overhauled, because opening the hive will cause a little excitement, and they should have free egress while this lasts. Where sliding entrances are used, they can be effectually closed and re-opened in an instant, so that very little time is taken up, and the plan will be found useful in checking robbing in its early stages. Brush off *d.bris* from floor-boards into a newspaper and burn.

EDITORIAL NOTICES.

ADVERTISEMENTS should be sent to the PUBLISHER.

Letters for Publication, as well as specimens and plants for naming, should be addressed to the EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be written on ONE SIDE ONLY of the paper, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith. The Editor does not undertake to pay for any contributions, or to return unused communications or illustrations, unless by special arrangement.

Illustrations.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, &c.; but he cannot be responsible for loss or injury.

Local News.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

Newspapers.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

APPOINTMENTS FOR APRIL.

SATURDAY,	APRIL 3	{ Societe Francaise d'Horticulture, Isle of Wight Horticultural Society, Shropshire Horticultural Society's Spring Show.
WEDNESDAY,	APRIL 7	{ Royal Calceolonia Horticultural Society's Exhibition, Edeburgh (two days).
SATURDAY,	APRIL 10	{ Royal Botanic Society's Meeting.
TUESDAY,	APRIL 13	{ Royal Horticultural Society's Com- mittee (National Auricula and Primula Society), at Drill Hall.
THURSDAY,	APRIL 15	{ Linnean Society.
SATURDAY,	APRIL 24	{ Royal Botanic Society's Meeting.
TUESDAY,	APRIL 27	{ Royal Horticultural Society's Com- mittee.

SALES FOR THE ENSUING WEEK.

MONDAY,	APRIL 5	{ Anemones, Roses, Gloxinias, Begonias, Spiraeas, &c., at Protheroe & Morris' Rooms, Border Plants, Lilies, Bulbs, Roses, Shrubs, &c., at Stevens' Rooms.
TUESDAY,	APRIL 6	{ Established and imported Orchids, at Protheroe & Morris' Rooms.
WEDNESDAY,	APRIL 7	{ Japanese Lilies, Carnations, Green- house Plants, Roses, Gladioli, &c., at Protheroe and Morris' Rooms. Choice Roses and Palms from Ghent, Border Plants, Fruit Trees, &c., at Stevens' Rooms.
THURSDAY,	APRIL 8	{ Border Plants and Bulbs, Roses, Shrubs, &c., at Stevens' Rooms.
FRIDAY,	APRIL 9	{ Established and imported Orchids, from Messrs. F. Sander & Co., at Protheroe & Morris' Rooms.

AVERAGE TEMPERATURE for the ensuing week, deduced from Observations of Forty-three years, at Chiswick.—46° 9'.

ACTUAL TEMPERATURES.—

LONDON.—March 31: Max., 54°; Min., 39°.
PROVINCES.—March 31 (6 P.M.): Max., 49°, Jersey and Scilly; Min., 38°, York.

It has been placed to the credit of the late Emperor of BRAZIL that on being shown the fly-wheel of a certain steam-engine, and informed that it made over 300 revolutions per minute, he remarked that it was far ahead of his country, for they could only muster that number of Revolutions in a year; and so of Greece it may be remarked that many have been the Revolutions during the past hundred years, especially in Crete—one of those—

“Isles of Greece,

Where burning Sappho loved and sung,”

and to-day the whole of Europe and Great Britain is exceedingly perplexed as to what is to be the order of things in Crete, and in Greece itself, in the days to come. We can

only express the hope that freedom and prosperity may be the outgrowth of the present imbroglio, for then horticulture and agriculture will flourish on this borderland of the East. As to the resources which these two are capable of yielding in freedom and peace it were difficult to say. The island lacks proper cultivation, is thinly populated, its exports are limited in value and number—olive oil, wine, raisins, soap, Locust-beans, Valonia, Almonds (shelled), and some Oranges. The islanders do not profess to be great statisticians—perhaps it would be nearer the truth to say that the Turk does not bother much about such things as statistics; hence our Consular agent in Crete, Sir A. BILLOTTI, finds it exceedingly difficult to get at the truth in all such figures as relate to exports and imports, only those immediately engaged in carrying to and from the fair little island being able to give reliable information on quantities and values—completeness not being guaranteed. Every time there is “disagreement” between Turk and Cretan, there is destruction of Olive-trees, Vines, carobs, and farm products generally. To-day the news is just the same—looting, lawlessness, and wanton destruction. Vineyards, orange-groves, olive-plantations, are not the growth of a season, and one need not wonder to learn that husbandmen get disheartened, and throw in their lot with other workers in other places. Of the products now shipped from the various Cretan ports, a fair proportion finds its way to this country—in the shape of olive-oil, raisins, Locust-beans, Valonia.

Manchesters supplies a fair amount of the imports; Greece, Turkey, Austria, and Germany, being comparatively near neighbours, about the remainder of the trade. Says Sir A. BILLOTTI:—“Articles of exportation are paid to merchants cash down. They receive in their stores the agricultural or industrial products of the peasants, who are at liberty to leave them in deposit up to two years, and sell them at their convenience within that period. In return, they pay interest at the rate of 9 per cent. on all sums advanced to them by the merchants.” Stocks of olive-oil, &c., are sometimes kept in hand for a couple of years to get a good regular price. The Olive crop has been notable for the alternation of good and indifferent crops, so that the marketing system is evenly profitable. Should peace follow the present chaos, we cannot doubt that agriculture will rapidly come to the front, and most certainly a fair amount of British capital will find its way to this long-suffering land.

NYPHÆA × LEYDECKERI.—This is another of the beautiful hybrid hardy Water Lilies raised by M. LATOÛR MARLIAC, of which we have already given other woodcuts. Our illustration (fig. 73) was taken from a plant grown in the lake at Gunnersbury House, Acton, by Mr. HUDSON. The leaves are heavily blotched with dark purple, and the flowers are of a delicate pink colour. Messrs. VEITCH tell us that May and June are the best months for planting. They need no further attention than keeping the ponds free from weeds. It is not advisable to plant these Water-Lilies in lakes tenanted by swans, or in those infested with water-rats.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.—At a meeting of the Committee of the Gardeners' Royal Benevolent Institution, held at the offices, 50, Parliament Street, S.W., on Friday, March 26, the following Resolution was unanimously adopted:—The Committee of the Gardeners' Royal Benevolent Institution desire to place on record an expression of their deep regret at the severe loss

they have sustained by the death of Dr. HOGG, Chairman at the Anniversary Festival Dinner in 1876, a Vice-President, and a Trustee. For the long period of fifty-five years, Dr. HOGG had taken a keen and active interest in the work of the Institution; he always had its welfare at heart; and his warm support would be greatly missed. The Committee further desire to express their sincere sympathy with Mrs. HOGG and her family in their bereavement.

AN ORCHID COMMITTEE FOR MANCHESTER AND DISTRICT.—A circular bearing the signature of W. A. GENT, 44, Faulkner Street, Manchester, the purport of which is the formation of a committee dealing with Orchids, has reached us lately. It runs as follows:—“At the instance of several gentlemen in the surrounding district, it has been thought desirable to form an Orchid Committee with headquarters in Manchester, composed of amateurs or private growers, as separate and apart from the Orchid Committee of the Royal Horticultural Society. An entrance-fee of three guineas, and an annual subscription of one guinea thereafter, is suggested; but this and other matters are subject to the approval of the meeting to be called at an early date (of which due notice will be given), your attendance thereto being cordially invited. It is estimated that within a radius of thirty miles of Manchester the Orchid wealth of the country is centralised; this fact is generally recognised by many people interested in their culture, and I shall be very glad to receive the assurance of your support to the project herein referred to.”

SECRET TRADE COMMISSIONS.—The Council of the London Chamber of Commerce has recently appointed a Special Committee to inquire into and report upon the subject of “the pernicious practice of giving and receiving secret trade commissions.” A preliminary meeting was held on the 2nd ult., when Mr. DAVID HOWARD, one of the Vice-presidents of the Chamber, was elected Chairman, and Mr. WALTER HAZELL, M.P., Deputy-Chairman. In order that the committee may have the fullest information before it, the Council desire to make it known that the Committee are willing to receive and consider confidentially any evidence or information on the subject which anyone may be disposed to bring before it. Mr. KENRIC B. MURRAY, the Secretary, invites confidential communications, to be addressed to him by letter, or to be made to him verbally, to be held before the committee, and to say that no communication or information will be given to the committee without the previous consent of the party forwarding the same. Any information which may be given will be treated in the strictest confidence, and no names or particulars will, unless authorised, be allowed to transpire even in committee.

ABERDEEN.—An association is being formed, at the instance of the General Council of the University of Aberdeen, for the purpose of diffusing information regarding the wants of the University, and of collecting funds, and applying the same to purposes tending to promote its efficiency as a seat of learning. In the enumeration of the more pressing wants of the University, the second place is given to “a botanic garden, and funds for its maintenance;” and among the lectureships suggested, “forestry” holds a good place. Already a large and influential number of gentlemen have become members of the association, and the names are still coming in. It is sincerely to be hoped that Dr. JAMES W. H. TRAIL, Professor of Botany in the University, will soon have one of his pet schemes carried out—the establishment of a botanic garden.

GOURD FESTIVAL.—During the sojourn of the QUEEN at Nice, she is reported to have visited the square in front of the monastery of Cimiez, to see the annual Gourd festival. The QUEEN examined with interest the painted and decorated Gourds, and purchased a certain number. Will some Riviera correspondent kindly give a little further information about this festival?



FIG. 73.—*NYMPHEA X LAYDEKERI*: FLOWERS PINK. (SEE P. 220.)



THE NURSERYMEN, MARKET GARDENERS, AND GENERAL HAILSTORM INSURANCE CORPORATION.—The directors submitted to the shareholders the second annual report on the business of the Corporation for the year ending February 23, 1897, together with the audited accounts. The Corporation was registered on February 23, 1895, as a limited liability company, with an authorised capital of £100,000. The first issue was 5000 shares of 25 each, all of which have been applied for and allotted, and 10s. per share have been called up and received. The directors drew attention to the gratifying fact that, not only has all the issued capital been subscribed, and the number of subscribers increased, but also that the income has been largely augmented, whilst the working expenses have been less than in the previous year. The agencies all over the country have been increased to seventy-two, and the directors would be glad to receive applications from gentlemen who would undertake agencies in districts not yet represented. The directors draw attention to the special advantages of insuring with the Corporation, the loss of glass by hail being immediately made good at the rate per square foot at which the glass was insured. The contents of glasshouses are likewise insured, an advantage offered by no other insurance office.

REVENUE ACCOUNT.

Income.—The income from premiums amounted to £89 11s. 5d., which—with dividends derived from investments, £54 6s. 1d., and £49 13s. brought forward—made the total income, £193 10s. 6d.

Expenses.—The total sum charged against revenue was £670 9s. 10d., consisting of the following items:—

Commissions on insurances	492 8 1
Working expenses, including secretary's salary	194 1 9
20 per cent. written off formation expenses (£339 1s. 4d.)	80 0 0
10 per cent. written off office furniture and fixtures (£40 7s. 8d.)	4 0 0
Reserved for unexpired risks	390 0 0

BALANCE SHEET.

Capital and Liabilities.—Shareholders' Capital:—

5000 shares of £5 each	25,000 0 0
Called and paid up, 10s. per share	2,500 0 0
Sundry creditors	5 5 0
Balance of revenue account	323 0 8

Assets.—Of the paid-up capital, after deducting balance of formation expenses and cost of furniture, £1883 10s. 3d. is invested in 2½ per cent. Consols, amounting at cost price to £151 6s. 6d., £200 in 3½ per cent. Liverpool Corporation Stock, costing £107 13s. 6d., and £50 City of London 3½ per cent. debentures, costing £25 15s. 6d. The remainder is held in the cash at bank.

The directors recommended the payment for the year of a dividend to shareholders at the rate of 5 per cent. per annum on the paid-up capital free of income-tax, amounting to £102 18s. 6d., and they suggest that the balance of revenue account, after setting aside £200 for unexpired risks, be dealt with as follows, *viz.*, set aside £100 to create a reserve fund, and carry forward the sum of £139 2s. 2d.

Deep regret was expressed on the death of Mr. JAMES WEBER, of Covent Garden, one of the trustees of the corporation. It will be necessary, therefore, to elect a Trustee to fill the vacancy.

"THE DAHLIA."—In this handy little volume published at a shilling by Messrs. MACMILLAN, Mr. CUTBERTSON has condensed a great deal of information concerning the history, botany, propagation, cultivation, and exhibition of the Dahlia, together with a catalogue of varieties, and an article on the future of the Dahlia. Mr. CUTBERTSON has had as his associates, Messrs. RICHARD DEAN, JOHN BALLANTYNE, STEPHEN JONES, and ROBERT FIFE, so that readers of the book may be well confident that the information is accurate and up to date. One thing surprises and disappoints us. A few years ago, the Royal Horticultural Society, the late Mr. SHIRLEY HIBBERD, and some at least of the horticultural press, were at great pains to collect and co-ordinate all the available history of the Dahlia. A Dahlia congress was held, papers were read and published, costly illustrations prepared, and the whole thing was worked out from the point of view of the cultivator and of the botanist as well as it could be, but, so far as we can see, little or no use or even mention has been made of this treasure-house of facts. The great, and we believe increasing popularity of the Dahlia originated

when single and Cactus Dahlias began to oust the ugly inellegant monstrosities pilloried in orthodox green stands. Nothing in its way can exceed the exquisite beauty of colouring of the show Dahlias, but the way of exhibiting them, except, of course, for purposes of adjudication, is even worse than in the case of the Rose. The Rose is so exquisite, that, however exhibited, it is still beautiful, which only a few devotees can admit to be true of the Dahlia under like circumstances. Happily, of late a more excellent way of showing Dahlias has become popular, and their great decorative value has been apparent.

THE HORTICULTURAL TRADE OF THE ISLAND OF BUTE.—On Tuesday the 23rd ult., the Marquis of BUTE, the Provost of Rothesay, opened a new Post Office in that town. Hon. Sheriff MACKENZIE, in his speech at the opening banquet, thus referred to the gardening industry carried on in Rothesay and neighbourhood:—"The only considerable trade now is the trade of market gardening and the raising of seeds and plants. Coincident with the decay of other trades he had mentioned, they had this very important trade rising up amongst them. Without making any dozen or so firms engaged, one—that of Messrs. DOBBIE & Co.—had risen to a very important position in regard to the trade of the kingdom in its own department. In one year they had sent out no fewer than 140,000 parcels, &c., through the post office, at a cost of £1500 for postage alone. It was a trade which seemed to suit the genius of Rothesay, and they proved it by carrying on a business which depended so much on geniality of weather and good soil."

NEWCASTLE-UPON-TYNE FLOWER SHOW.—We have received the schedule of prizes to be offered by the Durham, Northumberland, and Newcastle Botanical and Horticultural Society on the occasion of the summer show, to be held in the Recreation Ground on July 8, 9, and 10. A special Victorian prize-class has been arranged for a collection of Rose blooms set up in water and named, arranged for effect, upon a space of 10 feet by 4 feet. Palms, foliage-plants, Ferns, and moss may be used at the discretion of exhibitors. The 1st prize will be one of the Society's gold medals and £12. The schedule in other respects is very similar to previous ones from Newcastle, liberal prizes being offered for plants, cutflowers, table decorations. Fruit and vegetables, in open classes and limited ones. A good show may be anticipated.

THE TIMBER SUPPLY OF THE BRITISH EMPIRE.—Under this title, Dr. SCHLICH, Professor of Forestry at the Royal Indian Civil Engineering College, Cooper's Hill, delivered a lecture at the Imperial Institute on Monday evening, March 22. A table showing the imports of timber into Great Britain, and giving other details, had been prepared and circulated, and upon this the Professor prefaced his remarks. The lecture was more or less of a statistical character. Dr. SCHLICH referred to the enormous amount of mischief done in the cutting down of young trees in the Scandinavian forests for the wood-pulp industry, and also to the serious havoc caused by forest fires, especially mentioning Canada, where ten times the amount of timber has been destroyed by fire than was ever cut. With a proper forest conservancy, the lecturer looked upon Canada as the safest source for the future timber supply of the world. He strongly recommended the planting of waste lands in Scotland and Ireland to provide work for the surplus population. No reference was made to any possible substitutes for the timbers now in commerce. In the table of statistics before referred to, Dr. SCHLICH gave, under Mahogany, 262,713 as the value of Mahogany imported from West Africa during the year 1894, but he omitted to mention the important fact that the true Mahogany (Swietenia Mahogoni) is not found in Tropical Africa. There are several trees which furnish the so-called African Mahogany, and so far only one has been satisfactorily determined, namely, the

Calleedra, or Mahogany tree of the Gambia (Khaya senegalensis). The tree furnishing "Abeku," or Gold Coast Mahogany, is a Sapotacea, the seeds of which are occasionally imported into this country from the West Coast as an oil-seed.

HAMBURGH GENERAL HORTICULTURAL EXHIBITION.—It is officially announced that Baron SCHROEDER of The Dell, Egham, intends to exhibit a number of Orchids at one of the early shows; the space required by the plants being about 50 square yards. This proof of his old attachment to the town of Hamburg, and sympathy with the objects of the great undertaking, is greatly appreciated.

"BIBLIOTHEQUE D'HORTICULTURE."—Under this general title M. OCTAVE DOIN, 8, Place de l'Odéon, Paris, is publishing a series of small hand-books on horticultural subjects by various writers. They are published at a price to bring them within the means of the thrifty amateur, and so far as we have tested them, they appear to be excellent. They are too numerous to notice individually, especially as being written in the French language they will appeal to a limited number of our readers. We give the titles of some that lie on our desk, and can, without hesitation, recommend them to the other who read French:—*Les Tosières* (Roses) by COCHET-COCHEZ and S. MOTTE; *Culture des Fougères Exotiques* (Culture of Exotic Ferns) by ADOLEPHE BUYSSONS; *Calceolaires, Cinéraires, Cœlœs, Hélioïtropes, Priméveres de Chine, &c.*, by JULES RUDOLPH; *Les Geraniums, (Polargonium, zonal et inquinans)*, par H. DAUBENAY; *Les animaux utiles et nuisibles à l'Horticulture*, creatures useful to or detrimental to horticulture (insects excepted), by ALE. LARREALÉRIER. In general treatment these little books agree. There is a slight botanical history of the genus, very well done, a systematic account of the principal groups and of the most important species, details concerning their culture and propagation. The volumes are freely illustrated, but some of the illustrations are worn as with long service. Some, such as that devoted to Roses have an index, others have only a *table des matières*, which is by no means a substitute for an index. The treatise on the animals which co-operate with the gardener, and those which are more or less of a nuisance to him, is also well done, but too condensed.

JAPANESE BAMBOO.—The following extract upon this subject is taken from the *Journal of the Society of Arts* for March 26:—"Bamboo and Bamboo wares constitute an important item in the miscellaneous export commerce of Japan. Bamboo for shipment abroad is grown in districts adjoining Kyoto and Osaka, and in Shikoku and in Kyushu, the varieties differing somewhat, according to localities. In Hiroshima the black and the spotted varieties grow; the former is produced in Kochi, also in many parts of Kyushu. Bamboo grown in Yamauchi, Oita, and Ehime belong to the cheap varieties. The cultivation of black Bamboo is carried on extensively in Kochi, where a *tan* (a quarter of an acre) of Bamboo yields 30 to 60 yen per year. Bamboo is exported to most countries of Europe, and also to America and Australia. The bulk of the Bamboo shipped from Kobe—from which place nine-tenths of the total are imported—goes to England, the varieties being black, spotted, and white. To France and Germany the black and white sorts of the best quality are shipped; while long, bleached, angling Bamboos are in demand in New York."

"FERNS AND FERN CULTURE."—Mr. J. BIRKENHEAD has issued a second edition of his very serviceable little book, which may be had from the author at the Fern Nurseries, Sale, near Manchester. Great attention is given to the preparation of composts and the methods of cultivation and propagation. That Fern roots have "mouths" by which they take up moisture is a statement that the botanist will not accept. We cordially commend the little book to the notice of those who are beginning the culture of Ferns.

LEE, BLACKHEATH, LEWISHAM, AND WEST KENT HORTICULTURAL SOCIETY.—The successful series of monthly lectures which have been held by this body of gardeners at the Instituto, Old Road, Lee, was brought to a close on Friday, March 26, Mr. H. J. NETTLEFOLD presiding, when a lecture, by D. B. CRANE, Esq., Highgate, was read on "The Artistic Arrangement of Cut Flowers in Vases, Epergnes, &c." Mr. JUDGE, who, in the absence of Mr. CRANE, read the paper, brought some Orchids, including a fine plant of *Dendrobium Wardianum giganteum*.

"THE LARVÆ OF BRITISH BUTTERFLIES AND MOTHS."—The Ray Society has published the seventh volume of the series of descriptions and illustrations of the larvæ of British butterflies, comprising the first portion of the *Geometre* prepared by the late WILLIAM BUCKLER, and edited by Mr. G. T. PORRITT. The illustrations, mostly by Mr. BUCKLER, are excellent, the text full of information, so that as a reference work it will, like its predecessors, be indispensable in entomological libraries.

MR. DOUGLAS.—The members of the National Carnation and of the National Auricula Society propose to testify their esteem for their late secretary by presenting him with a striking memorial at the luncheon at the Hotel Windsor on April 13.

ROSE SHOWS IN THE JUBILEE WEEK.—Mr. E. MAWLEY, Honorary Secretary of the National Rose Society, writes: Local considerations having rendered any day in the Diamond Jubilee week impracticable, the date of the National Rose Society's Southern Show, at Portsmouth, has been changed from Wednesday, June 23, to Friday, June 18.

READING AND DISTRICT GARDENERS' MUTUAL IMPROVEMENT ASSOCIATION.—The usual fortnightly meeting of the above society was held in the Clubroom, British Workman, on Monday evening, March 29, and was largely attended. The President, Mr. C. B. STEVENS, occupied the chair. Apart from the lecture, the feature of the meeting was a presentation to the honorary secretary, Mr. POUND, as an acknowledgment of services rendered to the association. The gift consisted of a purse of gold (£18) and an album, containing the names of 138 subscribers. Proceeding with the usual routine of the meeting, the present called upon Mr. TOWNSEND, gardener at Sandhurst Lodge, to read his paper on "Summer Bedding and Summer Flower Gardens, also the Water Garden." The plants recommended by the lecturer were *Fuchsia*, Ivy-leaved *Pelargonium*, *Lobelia cardinalis*, *Verbena*, *Petunia*, *Viola*, fibrous-rooted *Begonias* (such as *Sutton's Crimson Gem*, *Princess Beatrice*, and *Afterglow*), *Ajuga reptans*, *Phlox Drummondii*, *Mimulus*, *Gladiolus*, *Cineraria maritima*, *Ricinus Gibsoni*, *Maize*, *Salvia* (*Sutton's Scarlet Queen*), *Marguerites*, *Heliotrope*, *Eunonymus radicans variegata*, *Zinnias*, *Habrothamnus*, *Erythrina*, &c. As materials wherewith to plant a border, mention was made of *Cypripedium*, *Juniperus*, *Acer*, *Hollyhock*, *Aster*, *Canna*, *Ricinus*, *Hydrangea*, *Lilium*, *Lilium*, *tuberosum* *Begonias*, leaving spaces for the introduction of tender plants and annuals as the warmer weather approached, as herbaceous *Phlox*, *Dolphins*, *Canna*, *Lupines*, *Lavatera*, perennial *Sunflower*, *Dahlia*, *Rudbeckia*, *Pyrethrum*, *Lychnis*, *Sweet Rocket*, *Spiraea*, *Montbretia*, *Lobelia cardinalis*, *Gypsophila*, *Picotee*, *Carnations*, *Calceolarias*, *Aster*, *Sweet Williams*, *Mimulus*, *Aubretia*, *Zinnias*, *Godeitia*, *Funkias*, *Begonias*, &c. Reference was made as to the grouping of pot plants about the lawn by inserting the pot to the rims in the grass. This is carried out in Sir W. FARREN's garden at Sandhurst Lodge, and greatly admired. *Fuchsia*, *Plumbago capensis*, *P. c. alba*, *Solanum jasminoides*, *Habrothamnus* and *Swainsonias* lending themselves admirably to this purpose. The water-garden was then touched upon, the lecturer dealing with the various plants most suitable for different sized ponds. A beautiful collection of florists' varieties of *Cineraria* was sent by Messrs. SUTTON & SONS, and of *Cineraria* *cruenta* hybrids, also specimens of *Cineraria* *cruenta*.

THE HAMBURG EXHIBITION.—One feature of the Hamburg Exhibition will be a large tank lighted and warmed for exotic Water-Lilies; among them, yellow, blue, and red *Nymphæas*, and *N. zanzibarcensis*, will be included. There are, now-a-days, many new varieties of these plants, and among prominent exhibitors who have devoted much attention to them may be mentioned MM. KARSTER DE SREYER, who will contribute in stocking the tank, as will the Hamburg Botanic Garden. Outdoor aquatic-plants will be represented; M. TRIBAUT LYAN of Geneva will contribute specimens occupying 100 square metres of water.

THE SURVEYORS' INSTITUTION.—The next ordinary general meeting will be held on Monday, April 5, 1897, when a paper will be read by Mr. WALTER SIMMS (Fellow), entitled "London—an Appreciation." The chair to be taken at 8 o'clock.

PUBLICATIONS RECEIVED.—*Nederlandsche Maatschappij voor Tuinbouw en Plant-Kunde* (Netherlands Horticultural Society). List of Certificated Plants in 1896.

WEST BANK HOUSE, HEATON MERSEY.

THE owner of West Bank House, John Leemann, Esq. (gr., Mr. Edge), has put up, on the most approved principles, a splendid range of glass, in which he has collected a general assortment of ornamental plants—Orchids forming a notable feature. Like most amateurs who favour Orchids, Mr. Leemann began by collecting with cheap popular plants, until further experience showed him how desirable it was to buy the choicer species and varieties. In this well-appointed establishment, where everything is kept in apple-pie order, I can see another of our rising Lancashire establishments, where gardening of the ornamental kind, both indoor and outdoor, promises to be of as prominent a character as a fine gallery of pictures, where the eye of a connoisseur is held. The position is on a slope, with nice undulations, and the breezes play freely in the tiered span-roof glass erections. They are fitted up with all modern appliances to suit the growth and comfort of the various subtropical and temperate-zoned plants—fitted up, too, with electric-light, and those Teak blinds which the writer recommended in the pages of the *Gardeners' Chronicle* more than a quarter of a century ago, after seeing M. Lueddemann's *Phalaenopsis* so blinded about the environs of Paris, and which are now very generally used in all Orchid establishments. Of the particulars of these, and of the grounds, in the meantime, we do not mean to touch, rather going into somewhat of detail about the conservatories attached to the mansion-like villa on the crest of the hill.

The conservatories are in three tiers—that is, on three levels—an arrangement that is partly due to the slope of the ground. They are attached to the billiard-room, and are accessible from others without going out-of-doors. While they are lofty, they are not too much so for the plants and the light from the span-roof reaches even the smallest plants. In the principal portion are a fine lot of *Camellias*, and some of the fragrant greenhouse or rather intermediate-house *Rhododendrons*, as well as specimen *Azaleas* and miscellaneous plants standing on the tessellated floor, and some from the ornamental stages, which go well together with the bulbous and ornamental plants that are provided in relays from the other service-houses.

Orchids in flower are grouped on a stage in the inner circle adjoining the billiard-room, and formed a very pretty show at the time of my visit. Among *Dendrobiums* were some striking forms of *D. nobile*, from the white forms of the *Cypheri* type, and *D. nobile nobiliss*. Among the choicer ones we observed *D. Cybele*, which is a much larger flower than the very similar *D. nobiliss*, although not so highly coloured; *D. Wardianum* in abundance, and the white form of it seen here was a very good one. For varying and adding to the finish of a group of

Orchids, nothing is better than *Cymbidium Lowianum*, with its rich variety of colours.

A very fine form of *Cattleya Trianae* *alba* was noticed, a good square flower, with finely-femur petals of good substance; the lip large and round, and but for the slight flushing in the extremity of the blade, which proved it was not an *albino*, it would be put into the first rank. *Odontoglossum crispum* and *Miltonia Roezlii* were species observed in faultless condition. A plant of *O. cirrosium* was in fine flower; also the bright yellow and chestnut-blotched *Oncidium sarcodeum*. The *Cypripediums* are very select. I noticed a remarkable *C. Boxallii*, with fringed segments, heavily spotted with black, and a good *C. villosum* species, which remain a long time in flower. J. A.

NARCISSUS ELLEN WILLMOT AND SOUTHERN CROSS.

THE two pretty varieties of *Narcissus* of which we afford our readers delineations, were raised by that successful cross-breeder, the Rev. G. H. Engleheart, of Appleshaw, Andover. The variety *Ellen Willmot* belongs to the Ajax section, and possesses a creamy-white perianth, consisting—as fig. 74 shows—of comparatively short, broad segments; and the corona is lemon-yellow, the two portions of the flower forming a pleasing contrast of colour. *Southern Star* (fig. 76) is an evident cross between the *Poet's Narcissus* and some other near ally of that section. The perianth in the case of this variety is white, and the corona, as regards its margin, of a vivid red colour. Both varieties received First-class Certificates at the meeting of the Royal Horticultural Society on March 23, 1897.

L'ÉCOLE NATIONALE D'HORTICULTURE DE VERSAILLES.

THE National Horticultural School of Versailles is situated in the grounds of the late "Potager du Roi Louis XIV," which was established in 1678, by De la Quintinie, inspector-general of the Royal Gardens, in the reign of Louis XIV. Although the grounds and conditions were not very favourable to work upon, he distinguished himself by producing a real "Chef d'œuvre" where everything could be grown to perfection. The story says that the king would have Asparagus in December, Radishes and Lettuces in March, Strawberries in April, Peaches in May, &c., and that he had them, which at that time was a very rare thing.

The glass-houses where all the fruit, vegetables, and flowers were grown, have now been replaced by better ones, but the shape of the garden, with its fine terraces and walls full of beautiful fruit trees skillfully trained, is the work of this venerable gardener, and there are still a few "Catillac" Pear trees which are supposed to have been planted by his own hands, and which bear every year a heavy crop of fine sized fruits.

Until the first days of the Third Republic, all the produce of these gardens was used to supply the tables of the sovereigns; and it may be said that M. Thiers, the first president, made use of them up to 1873, when the national Assembly at the proposition of the late M. Joigneau, senator, supported by M. Guichard, decided that these gardens and buildings should be used as the site of a superior school of horticulture where nothing should be spared to train good professional and practical gardeners.

The school was opened in October, 1874, under the directorship of the late M. Hardy, formerly superintendent of these gardens.

The announcement of the opening of the school gave great satisfaction throughout France and abroad, and although the government gave an annual grant of upwards of £4000 towards the expenses of the school, with £200 a year for scholarships, help was also sent from every part of the continent and abroad in the form of money, or in contributions of plants of all sorts.

Most of the horticultural societies and departments of France award also one or more scholarships of £40 a year to young gardeners who wish to improve themselves there. Owing to the increasing success of the school every year, the number of students is limited, the average for the last three years being from 100 to 110 altogether.

The students to be admitted have to pass an examination in elementary subjects and gardening, the first six on the list receiving a scholarship from the Government of £40, unless they already hold one given by a society or province. Those who hold no scholarship of any sort, but are supported by patrons or can afford it themselves, can enter the school, provided that they have given satisfaction at the examination; anyone may be admitted between sixteen and twenty-six years of age. The studies

skilful head gardeners. There are—1st, fruit trees; 2nd, fruit trees under glass, and forcing-houses where are grown Grapes, Peaches, Strawberries, Figs, Melons, Pine-apples, &c.; 3rd, hothouses and propagating-houses; 4th, outdoor and soft-wooded plants—a botanic garden, where all sorts of medical and economic plants are grown and carefully labelled; 5th, the kitchen garden, where are grown vegetables, forced and outdoor. Besides these, there is another place where students assist in making frames, lights, and learning how to repair certain articles, such as water-cans and tools, under a superintendent. At the end of every fortnight each student has to report upon his work. In the summer there are frequent excursions made to the chief nurseries or principal places, where the students see the best ways of cultivating various plants; and they also attend

may say that some of the most important positions in France and in the colonies, are filled by ex-students of Versailles, not to mention those abroad. From Hungary, Roumania, Spain, Portugal, and Germany, every year a good many persons come for the same purpose as do the others, to improve themselves at the school; and English, Belgians, Turks, Russians, Japanese, Swiss, Italians, Spaniards, and others, are found among the students; and they return benefited by the experience gained in the National Horticultural School of France.

In conclusion, I may mention that there is an association formed by the students, which publishes yearly a bulletin which mentions the position of the members, and includes articles on various subjects of interest, and on the experiments made at the school during the year. *Jules Gachelin, ex-Student.*

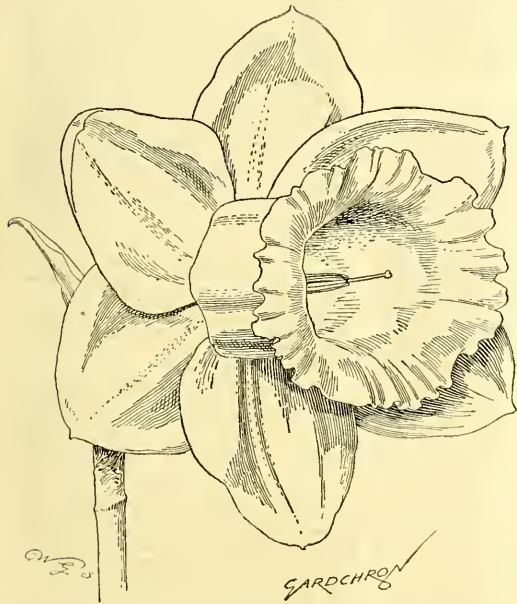


FIG. 74.—NARCISSE ELLEN WILLMOTT.
(SEE P. 222.)



FIG. 75.—NARCISSE SOUTHERN STAR.
(SEE P. 222.)

extend over three years, and are divided into two sections, theoretical and practical.

The lectures are on French, grammar, mathematics, geometry, book-keeping, surveying, physics, meteorology, and chemistry applied to horticulture and agriculture; zoology, entomology, and botany (first year, classification of plants, description of flowers, &c.; second year, anatomy of plants, flowers, descriptions of diseases, &c., cultivation of fruits under glass and out-of-doors, vegetables under glass and out, flowering plants in and out, and ornamental trees), freehand and landscape drawing, and water-colours. Different rooms are used for these lectures, which are given by professors appointed by the government. Various collections of insects, animals, flowers, and fruits are open to the students; as well as laboratories in which to experiment in physics, chemistry, botany, &c. There is also a field for experiments.

The practical section includes five departments; the student has to remain a fortnight in each under

the Horticultural Conferences, which are given occasionally, and the shows.

There are two examinations every year; one at Easter to show the student what tasks he has to work at, and one in July to class them for the year; besides these, the professors question the students at intervals throughout the year. Each student has to obtain a certain number of marks to be able to pass through the second year's course; those who do not attain them are declared unable to continue their studies, and leave the school. At the end of the three years they pass a general examination in every branch, theoretical as well as practical, and if they give satisfaction, a certificate is awarded them, and the two first obtain a scholarship from the Government, enabling them to pursue their studies abroad.

Every year the director receives from all parts of the Continent and abroad applications for men to serve as directors of botanic gardens, town gardens, head-gardeners, superintendents of colonial gardens, professors in schools and horticultural societies; and I

HOME CORRESPONDENCE.

THE PROPOSED ROBERT HOGG MEDAL.—The suggestion made in last issue by Mr. Harrison Weir that a special medal for fruit should be founded to keep alive the memory of our most distinguished pomologist, will be received with extreme pleasure by all those who knew the late Dr. R. Hogg, and by those who have benefited by his work. The *Fruit Manual* is a lasting memorial of his careful skill and industry, and is of inestimable value to all fruit-growers; it is right, therefore, that the man who rendered such eminent services to his countrymen should live in their memories, and a medal seems to be the best method of ensuring this end. For many years I enjoyed the privilege of his friendship, and these years will be never forgotten by me. I shall hope to add my name to subscribers of the memorial in honour of my old friend. *T. Francis Rivers.*

— The admirable proposal made by Mr. Harrison Weir in last week's *Gard. Chron.*, will undoubtedly

receive general support, as the name of a man who has done so much for pomology could not be perpetuated in a more fitting manner. If the scheme is carried out, as I sincerely hope it will be, let the medal be expressly for the encouragement of fruit culture, and let those entrusted with the award have as wide a scope as possible. The present writer was long familiar with Dr. Hogg's wishes and thoughts on such matters, and he has many times expressed himself in favour of increasing the educational advantages of exhibitions. Mere competition for prizes he did not consider the best means of advancing the true interests of horticulture. He was emphatic on this point, and he had considerable experience in the matter, for he offered valuable prizes for some years, at the time when the editor of the *Gardeners' Chronicle* was also offering similar prizes—in fact, I believe they were friendly rivals. I shall be pleased to contribute to the proposed Medal fund, and the moderate sum that will be required will be easily obtained. *One of Dr. Hogg's Pupils.*

SYNANTHIN IN DENDROBIUM BRYMERIANUM.—I send you a double flower of *D. Brymerianum* which has appeared upon a strong plant of twenty pseudo-bulbs, that has flowered in three previous years, but without anything abnormal being observed. Dr. Masters' *Vegetable Teratology*, 1869, does not mention this species as subject to this deformity. The species first came from Burmah four years after that date. But that work may be cited to show that Orchids as a class appear to be more susceptible of deviation from the type than are the members of most other natural orders. In the present case the flower-stalk is unusually fasciated, with a deep central channel. The structure of the actual flower would show three sepals, two petals, labellum, column and inferior ovary. In the present case, we have five sepals, of which four occupy the usual position, the fifth being rather narrow and pendent behind the labellum; there are three petals, two labella, side by side, and each perfect; two columns side by side. I presume that the plant must not be expected to develop the same deviation from the type in future periods of flowering. My personal basis for this opinion is chiefly observation of a plant of *Richardia ethiopia*, which last year threw a double spathe, but the flower this year is normal. *R. Reynolds.*

THE SPRING OF 1897.—During the twenty-five years I have been a gardener, I never remember such a March as that we have just passed through. There has been no east wind, no night frost worth mentioning, no dust, very little sunshine, and an extraordinary amount of rain. The effect on herbaceous vegetation generally, and spring-flowering bulbs in particular, has been marvellous, and I never saw the spring garden so early or so luxuriant as it is now. Notwithstanding the rough westerly gales which we have had for nearly a week, *Narcissi*, *Fritillarias*, *Erythroniums*, *Puschkinias*, *Muscicaris*, *Anemones*, and many other plants are from ten to twenty days in advance of their usual flowering time, and finer than I ever saw them. *Kaiophias*, *Eremuri*, and other plants which we have accustomed ourselves to think like a dry climate, have passed through a very wet autumn and winter with little or no injury, and if we do not have had April, which is an very much afraid of, it ought to be something like a record season for outdoor plants generally. These remarks apply to a dry, hungry, limestone-soil in a very cold backward district, and may not be equally applicable to more favoured soils and situations; but Mr. Engleheart, who grows *Narcissi* with greater skill and success than any other English amateur on a chalk-soil in Wiltshire, has also found the season extraordinarily favourable, and has got as I have, March and April flowers all at once. It is very remarkable how much many of Mr. Whitchell's bulbs from Asia Minor improve under cultivation in a climate so unlike that of their native country; and though the earliest flowering times, such as *Snowdrops* and *Xiphodons*, do not seem to have enjoyed the excessive wet of last autumn, I am convinced that on a well-drained soil much rain is better for the garden than the droughts we have suffered from in so many recent seasons. *H. T. Elwes, Coleborne, Gloucestershire.*

GARDENING ON THE THAMES EMBANKMENT.—A charming piece of garden meets the eye of the visitor who, issuing from the Charing-Cross station of the District Railway, enters upon the piece of garden lying below the Adelphi Terrace, backed at one point by *Luigo Jones' Water-gate*, and at the other end by the palatial Hotel Cecil and that of the Savoy. It is beautifully kept, and just now the beds of *Hyacinths* are delightful. In the

centre is a star-shaped bed of white, pink, and blue *Hyacinths*, now at their best; the beds of the stars is a large disc of white *Hyacinths*, and the six rays are formed of pink and blue *Hyacinths* alternately, and there are beds and borders of mixed *Hyacinths*, one of the pretty turquoise-blue *Myosotis disitiflora*, &c. Several beds of *Polyanthus* and alpine *Auriculas* have been netted over, so destructive to the flowers are the birds. It seems but a few years ago that the river lapped *Luigo Jones' famous gate*; and where this pleasant garden now stands there was an expanse of the river and the steam-boat pier. The superintendent of this garden deserves great praise for the prim neatness everywhere observable. *R. D.*

TULIPA KAUFMANNIANA.—Having read with interest of the above Tulip being exhibited at the Royal Horticultural on March 23, I should like to make a few remarks regarding its merits. I purchased four bulbs last autumn from Mr. M. Pritchard of Clifton, and planted them in a south border, with the result that the first flower opened on February 26, and lasted till March 24, attaining the dimensions of 7½ inches from tip to tip of segments; the colours of the flower are yellow from the base to about half-way up, and creamy-white the remainder; shaded-roze on the outside. The remaining three flowers opened about a week later, and these are still in good condition to-day, March 29. *J. Stow, The Close, Salisbury.*

VOLES AND MICE.—In a recent issue the above-mentioned rodents are confused by classing them as "field mice or voles." I am not quite sure at present which is which, but I believe I am correct in stating that the vole does not climb, and that the field-mouse does; hence it must have been the latter Mr. Dunn saw devouring the points of Scots Firs 4 feet high, and not the vole. Voles eat round the base of tree-stems as rabbits do, and have amounted to a plague in woods, both in England and Scotland, in times past. I was a boy at Drumlaig many years ago, when drains were dug in the plantations that the voles might fall into them, and being unable to climb out, die, or be caught, so destructive were they; and I believe the same thing has been done in the New Forest. Here we have been much bothered by both species in the gardens. After one severe winter, whole masses of a fine Holly-hedge died through the ravages of the field-mouse, which barked the stems 6 feet up completely. The vole is dumpy, flat-headed, reddish-brown in colour, and short-tailed. The field-mouse is a true mouse, with a long tail, a lighter colour, and a different shaped ears. We are constantly trapping both rodents here on the same ground, but for purposes of the article in nature I do not know but I notice that when large tracts of the common bracken have been accidental burnt here (the Wharfedale-wood) from sparks from the railway, and the turf laid bare, that the ground is one perfect network of vole-runs. Yet I have planted hundreds of thousands of Scots and Corsican Firs on this ground without harm from the voles in any way. *J. Simpson, Wortley.*

PEAR-BUD TRANSFERENCE.—Whilst the paper recently read by the Rev. Mr. Salmond at the Drill Hall on this subject was materially marred by the free use made in it of the term "crossing," as applied to budding, no crosses really being effected, yet it was full of interest in its latter portion, which, in dealing with practical work, was, of course, the most valuable. But if such remarkable results can be obtained from the frequent inter-buddings of variety on variety, as the lecturer indicated, how is it that we cannot have similar demonstrations of such results nearer home? If there be any place in the world in which frequent inter-budding is to be seen, what results to Pears may follow could be practised, surely that place is the Royal Horticultural Society's gardens at Chiswick. But I do not therefore assume that the superintendent should be required to undertake experiments of this nature, as his hands are already full. Could not a small committee of say three experts be appointed to conduct these budding experiments, certain trees, both on wall and in the open, being placed at their disposal for the purpose? If we are to credit all that Mr. Salmond told us, there is a good deal that remains to be done in Pear culture to be learned from such experiments, not only in creating greater fertility, but also in obtaining higher favour. Of course, with long unbiassed experience, we who are cold-blooded practical people, take all that is told with a large grain of salt; but all the same, it is not quite the proper thing that we should have to go to Yorkshire for practical information. To my suggestion that the rev. lecturer should send up samples of his fruit

in the autumn for which he claims a great improvement through inter-budding, no response was made. That seems to present additional reason why such experiments should be conducted under undoubted authority. *A. D.*

EUPHORBIA JACQUINÆFLORA.—Mr. D. T. Fish remarks, at p. 207, that he has never seen this plant stopped, pruned or trained into good specimens. The largest specimen that I have seen was in a Cheshire garden, of which the writer's brother had charge. This plant was about 8 to 10 feet across the fan, and about 3 feet high from ground. It was planted in lumps of fibrous peat, loam, and brick-rubble against a partition 'twixt a stove and intermediate house, and was treated with its inimitable sprays of blossoms—practically furnished the glass partition referred to. The plant was freely stopped, for its flowering sprays were used for decoration. It had very little room, and the roots being at ground-level were given no moisture for weeks together in dull weather. I have myself grown very fine plants in strong loam and burnt clay-earth in equal parts, not a particle of peat or sand being employed. These were planted out on a raised bed in a house devoted to *Gardenias*, *Eucharis*, and *Adiantum Ferns*, and were intended merely for stock when originally planted. There were about eight planted from 5 inch pots, bought in the autumn at a London sale, and sent northwards. From these I rooted 500 plants one spring, which kept the shoots in check. During the summer following, however, growth became abundantly free, and little attention was requisite. Had Mr. Fish seen these or the fan-trained example I have referred to, he would not have said the cultivator "gains nothing by stopping his plants," or that he "sacrifices vital force." The plant is too frequently killed by excessive watering, which means destruction to the delicate fine roots. It is frequently planted in inferior peat, that retains water as a sponge would do. If gardeners would plant this *Euphorbia* in sound loam and burnt clay earth, and afford ample drainage, at the same time avoiding manures of all kinds, and always keep it moderately dry, there would be fewer failures. The fan-trained example referred to above was grown in a pot for nearly a year, and took about one year and a half to cover the space named. At five years old it was the finest plant of its kind I have seen. *J.*

DESTRUCTION OF ANTS IN HOUSES.—I observed in a recent *Gardeners' Chronicle* an answer to an enquiry by "Artus" as to the best means of getting rid of ants in glass structures. No doubt if the nests and haunts of the ants could be easily got at, a solution of carbolic acid would kill or shift many; but it is often difficult to get at the nests or haunts, and if disturbed in the place, if not killed, they simply move to another part, more secure in the same or an adjoining house. Treacle and other sweet compounds mixed with arsenic may thin their numbers for a time, but they soon stop taking it, and the relief is only temporary, as so long as the queen ants keep on depositing eggs, so long will the supply of ants be kept up. I have tried most of the so-called remedies with very indifferent success. So, a few years ago I tried, with better results, "Smith's Ballinquinrain Ant-Destroyer," which Mr. Smith claims to be a slow poison, and capable of being carried to the nest to feed the queen and young. In a few months, with perseverance, we had the satisfaction of seeing the ants gradually disappearing, and before a year was out, there was scarcely one to be seen about the place under glass. For some time now we have been almost entirely clear of ants. In spring a few pot in an appearance, probably from outside, but they are easily disposed of. I observe by the label that Mr. Smith says the Ant-Destroyer exterminates cock-roaches and beetles as well. If so, it should be a boon to many gardeners, and should be better known. *D. Melville, Dunbrin Castle Gardens.*

DENDROBIUM NOBILE VAR. COOKSONI.—We have at present a *Dendrobium Cooksoni* in bloom having forty-nine flowers, the lovely dark colouring of the lip extending over three-quarters of the area of the petals, giving the flowers a very charming appearance. I would ask readers of the *Gardeners' Chronicle* if such fine specimens of this species are common? To my mind it is a great improvement on the ordinary noble. *R. J.*

BULB MITE.—I was much interested in Mr. Nield's article in last week's *Gardeners' Chronicle*, respecting his experience with the bulb-mite, in *Eucharis* particularly, because my experience has

been entirely opposite to his. Mr. Nield's plants became unhealthily in a high temperature and plenty of light, and on being placed in a lower temperature and heavily shaded, immediately recover. While my plants which had been in an intermediate temperature, and during the summer months heavily shaded, became very unhealthily, and nearly all the leaves gradually yellowed off; but on being placed in a brisk bottom-heat, high top-temperature, and moist air, they soon began to recover, and are now, good, healthy plants, throwing up plenty of strong flower-spikes. Of course, I shaded them from strong sunlight, but the reverse conditions, which has proved beneficial to Encharisa, would make it evident that the old proverb, "What is sauce for the goose, is sauce for the gander," is scarcely applicable in their case. *Frederic Tugwood.*

AN EARLY BIRD.—A young thrush which had left its nest was caught in these gardens this morning (March 31). It was quite strong on the wing. *R. Edwards, Deechy Lees-Oford, Sevenoaks.*

THE COLOUR OF TURNIP FLOWERS.—Why should the flowers of white Turnips be a deeper shade of yellow than those of Golden Ball Turnips? I first noticed this was the case when driving slowly one fine day alongside a field of Golden Ball Turnips in full flower. Among the mass of pale yellow flowers I observed one or two which were of a slightly deeper shade of colour. On pointing this out to a friend who was with me in the trap, he proposed an examination, which we soon carried out, and found that the few deeper-coloured flowers belonged to white Turnips, which, of course, ought not to have been there, and which were forthwith pulled out and unceremoniously bundled into the ditch at the roadside. *William Cuthbertson.*

SCOTLAND.

EDINBURGH BOTANIC GARDENS.

EARLY-FLOWERING HARDY RHODODENDRONS.—Recently the plants of *Rhododendron danicum* were at their best, the rosy-puce blooms, very numerous produced, having a nice effect; when grouped in a bed, as here, the plants gain in attractiveness. The variety *atro-virens* is also in close proximity, affording a good contrast. Under fair treatment, these shrubs may be depended upon to make good growth and flower freely annually. *R. crence* x, the hybrid of which the above species is one of the parents, has flowers individually larger, and of a slightly lighter colour. Taken into a greenhouse, and gradually forced, all of them will flower some time before outside plants, and are then useful for the decoration of the conservatory. These early-flowering species and varieties are liable to damage by late frosts, but apart from this the blooming period lasts for some weeks. *R. Nobleanum* is, of course, in evidence, the heads of rose-coloured flowers being conspicuous among the dense foliage. *R. L. II.*

NURSERY NOTES.

MESSRS. BARR AND SONS.

TUESDAY last was a glorious day to visit a handy plant nursery, for the cold winds had subsided and the bright warm sun was continuous. Everything out-of-doors was cheery, and it was one of the few days that have occurred this spring when one could walk over miles of nursery paths without discomfort.

March never passes before the Daffodils have commenced to afford a display of blooms in Messrs. Barr's nursery at Long Ditton, near Surbiton, but it is not often that so many blooms are developed so early as they are this season. We were somewhat surprised, indeed, to find that the mid-season kinds had yielded most of their flowers, and the bright show annually to be seen there was swiftly passing. Many of our readers probably know by name and experience the best varieties of Narcissi. We shall content ourselves by mentioning a few of the best that were carrying an abundance of flowers on the date already mentioned.

To commence with the Yellow Trumpet varieties: it goes without saying that the old and excellent Emperor was prominent among them, for it is cultivated in very large breadths. Resembling Emperor is one named P. R. Barr; it is said to be a good grower, and has a refined flower, but it certainly does not surpass the better known one. M. J. Berkeley, rich golden-yellow with a fine expanded trumpet, and reflexed brim, is a capital member of this section; and Monarch is a new trumpet of 1895, and therefore a very expensive one at present—it is of good form, full, rich yellow, large, and is said to be a good grower. Golden Spur, and several other excellent trumpet varieties were noticed; and Glory of Leiden (figured in the *Gardeners' Chronicle*, April 18, 1896). The last-named is one of the largest of the giant trumpets. The little cyclamineus major must be mentioned, for although it is very well known, it is not seen so frequently upon rockwork and other suitable positions as it might be. This elegant miniature Daffodil has bloomed exceedingly well at Long Ditton, but when this note is published, most of the flowers will have passed. The trumpet varieties with white wings, embrace many excellent flowers, including the ever-popular Empress. But one of the best of these is J. B. M. Camm, which has an exceptionally refined form and delicate colour. Weardale Perfection is not only the largest bi-coloured trumpet, but the boldest of all Daffodils. Grandis, Horsfieldi, and Madame Plomp, are also good ones. The last-named has broad perianth segments, and a fine long rich trumpet.

There are several very pretty Trumpet Daffodil, with white or pale-coloured flowers. We noticed of these, Matson Vincent, Marchioness of Lorne, moschatus, Snowflake, tortuosus, and William Golding. The last-named is of drooping habit, has pale primrose trumpet and white segments, and is sometimes called "Swan-neck Daffodil." Tortuosus resembles Snowflake in a measure, but is scarcely so good. Cernuus, Madame de Graaf, and Mrs. J. B. M. Camm, may be mentioned in addition to the above.

The Incomparabilis group, or "Star" Narcissus, is perhaps more popular than any, and there are innumerable varieties. Take the Barri strain, it includes Sensation, Siddington, Maurice Vilmorin, Flora Wilson, and Conspectus, all of which were to be seen in power at Ditton. Siddington, however, is later than most of the others, and but few blooms were open. Conspectus is the best-known and most desirable of them; it is one of the prettiest and most useful of all Daffodils. There would be a magnificent show of it a few days after these notes were taken.

Then there is the group of which Sir Watkin and Gloria Mundi are well-known types; we noticed Gwyther, King of the Netherlands, Autocrat, Lulworth, and Beauty.

Of the Leedsii section, there were in bloom Duchess of Westminster, Katherine Spurrell, and Mrs. Langtry. Each of these is good, but the last-named is rather later in blooming than some of the others. Nelsonii ananthis is a pretty flower, having a goblet-shaped cup of considerable attraction, and a broad white perianth. Of the varieties of *N. odorus*, Hemialis is the best; it is rich golden-yellow, has a long cup, and is much more fragrant than rugulosus.

But few of the Burbidgei varieties were yet in bloom, and these and the Post Narcissus will make a display for some weeks yet. We should mention the rush-leaved Daffodil, *N. juncifolius*; it is a very dwarf species, with tiny rich yellow fragrant flowers. We had the pleasure of inspecting a number of promising seedling varieties of Narcissus, but, as they are at present without names, and of course not to be obtained by the trade, we need not at present describe them. For several years past, Messrs. Barr have found it advantageous to protect the Narcissus beds during winter with leather. This is laid over them before severe weather sets in, and is removed as soon as the plants are seen pushing through the ground.

Though at present Daffodils are the chief attraction at these nurseries, they are not the only one, for there

are beds of Tulips which made a wonderful display of brilliant colour, including such varieties as Vermilion Brilliant, Vesuvius, Canary Bird, White Hawk, Chrysolata, Pottebakker in variety, and Keizerskroon.

Among several species of Tulipa, *T. biflora* major looked very pretty; it has small distinct flowers with yellow base, the rest of the flower white or palest-lemon. A very decisive patch of blue was afforded by some beds of *Muscari conicum*; it formed a distinct feature in the nursery. In smaller quantities there were other *Muscari*, including *M. paradoxa*, *M. cornuleum*, and *M. Gussoni*, all of them pretty. *M. paradoxa* has large pyramidal-shaped inflorescences, that go almost black in colour. Upon and near the rockery the Alpine plants are commencing to grow, but beyond a few *Primulas*, including *P. nivalis*, pure white, there are few of them in bloom yet.

Altogether, the nurseries at Long Ditton are very interesting at this season of the year, especially to those who admire Daffodils—and who does not?

MESSRS. J. VETCH & SONS (LIMITED).

At this well-known nursery *Hippeastrums* (*Amaryllis*) form an important feature at the present time, and will continue to do so for some five or six weeks longer. Great advances on what has hitherto resulted from the labours of the cross-breeder are not forthcoming, nor, indeed, expected; but improvements in form, and the elimination of the supposed objectionable green colour in the basal portion of the segments of the flowers, are being persistently followed up.

In pleasing symmetry of the flower, and in colouring, we have little that is new to chronicle; all shades of crimson, red, scarlet, and even purplish-crimson and cherry red, and their various combinations with white and creamy-white, were remarked. In previous years the visitor has had to lament the brevity of the display, but by ripening off the bulbs at various times during the summer and early autumn, the time of flowering is varied, and consequently the season of flowering of a large collection is lengthened, as it were, at both ends, although the bulbs are started into growth simultaneously, and their treatment is identical. In looking through the beds, there were bulbs with blooms on the waxy, others in full beauty, some with scapes just pushing up from the bulbs, and in various intermediate stages; still, the display of open bulbs seemed to be as large as usual.

Of fine novelties of good form of the present year, mention may be made of *Thelma*, a crimson-coloured self; *Femin*, white rays on a cherry-red ground; *Chio*, crimson, with distinct reticulations on the flower; *Charmion*, faint red stripes on a white ground; *Chigo*, an unusually brilliant scarlet flower, with a white band in the middle of each segment; *Cupid*, cherry-red streaks and flakes on a white ground; *Xantho*, deep crimson, and segments rather pointed; *Francisca*, a broadly-expanded bloom, bright crimson; *Hidalgo*, crimson, all but a patch of green colour at the base, the largest flower seen in the collection. *Ora*, *Corisande*, *Gem*, *Cabra*, *Fulledon*, *Carnis*, *Phrynia*, and numerous others with fancy names were noted.

The seedling *Cliveias* now in bloom form a beautiful display, most of them being equal to anything to be seen elsewhere under name, corymbs large and many-flowered.

A large span-roofed house, devoted to most seasons to displaying plants in flower, was gay with Dutch bulbs grown at their best, dwarf little plants of lilac, *Hydrangeas*, *Viburnum Opulus*, *Acaecia Drummondii*, the exceedingly pretty *A. cordata*, the numerous drooping shoots thickly clothed with creamy-white blossoms; *Azalea mollis*, *A. indica*, the floriferous *Azalea obtusa* alba, and *A. c. calyciflora*; the deliciously-fragrant *Bononia megastigma* in two varieties, *Erica Cavendishi*, *Mignonette*, &c.

A passing glimpse of the Orchid-houses enable us to speak of some of the firm's achievements in hybridising Orchids, of these are *Pendrobium Acicpe*, the parents of which are inappropriately, as regards their names, *D. Wardianum* and *D. Free-*

mani—the blossoms are white, purple tipped; D. noble robustum, certificated in 1896; D. Ainsworthianum intertextum, flowers chiefly white, the base of the lip only being purple coloured; D. sulphureum is of D. noble and D. aureum parents; D. Editha belongs to the D. noble section; D. Aneas, a cross between D. crystallinum and D. japonicum, has fragrant blossoms, white, with a faint lilac-coloured edge and lip; D. Wiganie has creamy-white blossoms, with a lip that has a purplish blotch at the base.

The rock Orchid-house had numerous plants in bloom, and the other rock-house was gay and charming with *Tillandsia Lindenii*, *Crinum macrostemon*, *Cactus Gaertneri*, and C. Makoyana, *Tavernemontana coronaria*, *Begonia Gloire de Seaux*, *Cliveas*, &c. The trailing *Potillos*, and other plants, used to clothe the rocks, have the tender tints that come with the renewal of growth.

SOCIETIES.

LINNEAN.

MARCH 18.—Dr. A. GUNTHER, F.R.S., President, in the Chair.

The Right Hon. Sir JOHN LUBBOCK, Bart., M.P., read a paper on "Stipules, their forms and functions." This embodied observations supplementary to those published in previous papers (*Lin. Soc. Journ.*, Bot. xviii. 217, and xxx. 463). It was shown that while the usual function of stipules is to protect leaves in bud, in some cases they replace them, and in others serve to hold water. Instances were mentioned in which stipules developed into stamens, and in other cases became glandular. Where stipules were absent, other arrangements for bud protection were found to exist. Attention was especially directed to the formation of the winter buds of certain common shrubs and trees, and some curious differences were noted even in nearly allied species. In the *Wayfaring tree*, *Viburnum Lentum*, the author remarked that the young leaves are uncovered, but are protected by a growth of hairs; in the *Ash* and *Thorn* the outer scales of the bud consist of expanded petioles; in the *Willow* the outer scales consist of leaves; in the *Poplar* stipules. The buds of the *Oak* and *Chestnut* were also described, and it was shown by the aid of lantern-slides that in the *Beech* the outer scales of the bud consist of two pairs of stipules, that the twelfth pair are the first which have a leaf, and that the subsequent growth is between the leaves, while the portion of the shoot between the stipules scarcely elongates at all. As a consequence the seat of each winter bud is marked by a ring, and thus a series of successive rings, which remain visible for many years, indicate each year's growth.

A discussion followed, in which Mr. A. W. BENNETT, Prof. Farmer, and Mr. A. B. KENDLE took part.

Mr. W. C. WOODALL read a paper "On the Origin of Transfusion-tissue in Leaves of Gymnosperms Plants." It was explained that "transfusion-tissue" is a special kind of conducting-tissue found chiefly in the leaves of Conifers, in direct connection with the vascular bundles. "Centripetal" xylem, only known to occur in the leaves of Cycads among living plants, has been found, well developed, in the cotyledonary bundles of *Ginkgo biloba*. In these latter, and in the cotyledonary bundles of *Cycas revoluta*, a distinct transition was observed between the elements of the centripetal xylem and those of the transfusion-tissue at the side of the bundle.

In studying the structure of the vascular bundle in the leaves of Conifers generally, a similar transition was also observed in a few genera between centripetal xylem and transfusion-tissue. These facts lead to the conclusion that transfusion-tissue, as universally found in recent Coniferous leaves, has originally sprung from the centripetal xylem of the leaf bundle of the Leaves of Gymnosperms Plants.

In the discussion which followed, critical remarks were made by Dr. D. H. SCOTT, Prof. Farmer, and Mr. G. R. MURRAY.

The objects exhibited included various forms of *Cyclan* and *Gineraria*, by Mr. W. T. FISHERSON-DYER; and drawings by Mr. E. B. GREEN of root-barks of plants with various parasitic growths, by Mr. ALFRED W. EYRE.

The next meeting of the Society will be held on Thursday, April 1, at 8.0 P.M. precisely, when the following papers will be read:—Dr. A. J. EWART, B.Sc., on the "Evolution of Oxygen from Coloured Bacteria." MISS HELEN R. POTTER, on the "Germination of Spores of *Agaricines*." (Communicated by Mr. GEORGE MASSEE, F.L.S.)

TORQUAY DISTRICT GARDENERS.

MARCH 24.—The Second Annual Spring Show was a considerable success. The large hall at the Bath Saloons was lighted by electricity by special arrangement, and the effect in the evening was very charming.

Messrs. R. VERRILL & SON of Exeter showed some very attractive rock-plants and Cacti, together with a collection of

Narcissus blooms. Messrs. CURTIS, SANFORD & CO., LTD., were well represented by a stand of flowering and foliage-plants, including some fine *Anaryllis*. The SOUTH DEVON FRUIT FARM (manager, Mr. T. PERRY) had large *Strawberries* and a great collection of Vegetables. Messrs. ALWARD, BEAUCHY & CO., HOVEY & SONS, and W. BURBIDGE & SONS, also exhibited, the last-mentioned firm contributing some fine tall Palms, which formed a grand centre-group in the show. Mr. J. SNEEGROVE of St. Elms (gr., Mr. W. Bale) showed an attractive stand of well-grown plants, including many *Orchids*. Miss LAYERS (gr., Mr. G. Lee) exhibited a group of *Orchids*. The FOREST TOWN COUNCIL were fittingly represented by an exhibit from the public gardens of the town, and consisting of miniature beds filled with *Hyacinths* and *Tulips*, with a background of imitation rockery and sub-tropical plants.

Mr. W. J. GOSNEY of Exmouth had some good new zonal *Pelargoniums*; and the JACOB FERRIS CO. showed an attractive stand of plants grown in the fibre. The principal prize-winners were Mr. J. W. KIMBER (gr., F. C. Ferris), Dr. W. FORD EMBLOW (gr., C. R. PROWSE), who was 1st in the miscellaneous groups; Mr. P. W. BUSHBY (gr., F. Peacock) who was 1st in the horticultural groups; very highly arranged exhibit; Miss LAYERS (gr., G. Lee), and Capt. W. FINE TUCKER (gr., J. Sloan), who had some very well-grown *Narcissus* and *Hyacinths*.

Mr. W. B. SMALE was represented by a showy stand of Palms, *Chorazias*, and *Azaleas*, together with a table of the best varieties of *Orchids*. The gold and silver medals to be awarded at the autumn show were also on exhibition.

The building was crowded during the afternoon and evening, and the attendance included Prince Albert of Belgium, who is at present staying at Torquay.

BIRMINGHAM GARDENERS' MUTUAL IMPROVEMENT ASSOCIATION.

The Hardy Bulb Culture in England.

[By F. W. BURBIDGE, M.A. Read before the Birmingham Gardeners' Mutual Improvement Association, March 15, 1897.]

(Continued from p. 211.)

There are in England to-day thousands of acres of waste land suited for bulb culture. All around our sea coasts, especially there are sheltered sunny nooks and valleys that are unweeded by wind and unscathed by biting frosts, even during our usual winter season. These places require selection and fertilization, in a word, we must discover our own land. You do not want the expensive horse-power, the deep tith, and the heavy manurings necessary for Swedes or Mangolds in order to grow bulbs successfully, but you must have a loam sufficiently sandy to be workable even during a rainy season.

The best bulb-soils are deep, rich tracts of alluvium or "Trent Warp," beside rivers, or in valleys near the sea. In Lincolnshire there are deep sandy soils, not unlike those of Holland, on which the best bulbs thrive well. Near Caistor very fine flowers and bulbs are grown, and so also in the neighbourhood of Boston and Wainfleet.

Messrs. Pearson & Sons, of Chilwell, Notts, have been very successful in growing *Narcissus*, as also many market growers in the Thames Valley, and especially Mr. James Walker, formerly of Whitton, and now of Ham Common, London, who has a large and successful growing, and make a speciality of *Narcissus* culture for the London markets.

In planting stock bulbs do not plant too deeply. It true that the finest flowers are those produced by bulbs deeply planted, especially on light, warm, and sandy soils, but such flowers are produced later, and the bulb increase is much less than when shallow planting is the rule. A depth of 3 to 4 inches is ample on ordinary soils.

It is most important to replant stock bulbs as early as possible, and to perform that operation during dry weather. Plant dry and on a firm bottom. All stock should be planted at latest before August if the best of results are desired.

Sloping land or banks amongst sheltering rocks, totally inaccessible to horse or plough, may often be made profitable by the spade and bulb culture. I have seen the wind and spray-swept Scilly Islands, and the Hurly flower plots along the rocky Blyth coast, where the soil is along the English shores there are sheltered and well-watered spots now lying waste, where many things, if not everything, would be possible to the intelligent bulb grower.

It is almost incredible, but it is true, that 100,000 *Hyacinths* or *Narcissus* may be grown on an acre of land of 11,000 to 12,000 may be grown on the same area; and when we come to such small fry as *Crocus*, *Snowdrops*, *Squills*, *Anemones*, *Winter Acenites*, &c., the numbers run up to 200,000 and 300,000 per acre.

Bulb culture often means a double crop, because, if produced early, the flowers supply a valuable profit, and a remunerative bulb harvest still remains. The best results will be obtained by utilizing light and airy greenhouses in which to

forward or develop the earliest flowers, and in such structures in the sheltered, sunny nooks by the sea, before mentioned as most suitable, but little fire-heat will be necessary. These greenhouses are of course available for Tomatoes, or other cultures after the bulbs are overgrown.

I shall not go into the price of bulbs per 1000 in order to show you how very profitable bulb-growing must be on all suitable soils, when undertaken by people who understand the subject. There are several factors that must occur in bulb culture, as in all other ways of making a living off the land.

First, the land must be that naturally most suitable to the kinds of bulbs grown, and naturally or artificially well sheltered. Secondly, the cultivator must not only know how to grow his bulbs well, but how to put them on to the best markets, and, finally, only the best kinds or varieties popular in the market must be largely grown.

In special cases a combined course of culture is better than a simple one. That is to say, fruit trees and bulbs may both occupy the same acreage with advantage, or, bush fruits and choice vegetables may also be grown side by side with the bulbs. But, on soils especially suitable in sheltered aspects, no culture I know is more surely remunerative than bulb culture. Nothing but a new railway, or the most liberal of building contractors, can induce the successful bulb-grower to move on and vacate his holding.

To new beginners the selection of the land is a complex problem, to the experienced it is less difficult. Now and then an accidental clump of bulbs, or a fruit tree tells the tale. A practical bulb-grower has a seventh sense, and knows, as it were, by instinct when he sees a suitable bulb-plot. But, if at all possible, an actual trial of bulbs of all kinds should be made, when they will soon give evidence of the best, as to the suitability of the soil and the land. As Arthur Young long ago said, no rental is too high for the best land, and none too low for the poorest of soils; an land that will grow bulbs and fruit to perfection is often to be had at a reasonable rate, especially now that grain crops are not so profitable as of yore.

An acre or two of good bulb land will pay better than ten acres of ordinary farm or garden produce, and I should not like to say the value of a root even of such select *Daffodils* as *Madame de Graaf*, *Golden Bell*, or *Glory of Leyden*—to say nothing of choice sorts that are rare, such as *Monarch*, *Weardale Perfection*, *Hodcock's Pride*, or the big and beautiful *Queen Wilhelmina*, the possession of the Rev. C. H. Engleheart's seedlings, not alone of *Daffodils* but also of other sections such as *Peerless* or *Incomparables*, like *White Queen*, or the new and much improved seedling *N. poetice*.

Any hardy bulbs that are worth more than 25 per 1000 in the market will pay to grow. Sound and heavy bulbs, as clean-skinned as possible, find a ready sale, even though not quite so perfect in form and in coat or skin as those from abroad. I have had bulbs of this class by the thousand from Scilly and the Isle of Wight sent, tied tightly in sacks, like Potatoes, and they flowered as well or better than the finest Dutch stock packed in Buckwheat cases and sent to the grower. The rough exterior of a bulb is not always an indication of its flowering qualities. A smooth-skinned and shapely bulb looks better in the store or shop, but it does not always behave better in the garden.

All large, sound, and heavy bulbs, even if rough coated, may be trusted to bloom well. As to the comparative merits of Continental & English bulbs, I may say that, while I believe our friends in Holland can, or rather do, produce the best *Hyacinths*, and, perhaps, also some early *Tulips*, yet we in England and Ireland grow by far the best *Narcissus*, the best *Tulips*, *Snowdrops*, and *Crocus* of all kinds.

So far as *Narcissus* are concerned, we can defy the world, both in rearing new and in growing all other varieties to the greatest perfection of luxuriant health and beauty.

It is not easy to find out how much is paid by us for imported bulbs from all sources every year, but it must be an enormous sum, and a very large proportion of it might be spent at home in the encouragement of bulb culture on English soil. I am a believer in free trade, and in all fair trade; but above all I believe in our home trade and in our home industries.

Finally, I believe that every bulb-grower should devote some of his leisure to rearing new hybrids and seedlings, so that there may be progress ahead, as well as lateral diffusion in bulb culture.

What Leeds, Backhouse, Herbert, Horsefield, Engleheart, and De Graaf have done, may be equalled or surpassed by other cultivators. Beautiful as are the first of our new seedlings today, they are not perfect in all ways, and there is room and a welcome for many more, equal or superior to them. It may not be so profitable to rear seedlings as it is to grow quantities of older kinds in good demand; still, given a perfect lot of *Narcissus* soil, I believe it would soon pay or a clever grower to take up the special culture and increase of all the rarest and most beautiful new kinds. The best varieties of bulbs to grow, of course, depend on soil and climate, &c., but all the best *Narcissus*, *Solid Tulips*, *Squills*, *Anemones* (especially *A. fulgens*), *Glaadioli*, *Crocus*, and *Snowdrops*, are profitable crops wherever they will thrive in quantity, and these may be supplemented by other and rarer kinds. F. W. Burbidge.

BRUSSELS ORCHIDENNE.

MARCH 14.—Orchid-growers may remember the *Oontoglossum Augustum* staged at the Temple Show last year, and that the plant was sold by M. Linden to a Belgian grower for nearly 8000 francs.

FRUIT.—AVERAGE WHOLESALE PRICES.

s. d. a. d.		Nuts, Cob, per		s. d. a. d.	
Apples, Wellingtons, per sieve	6 0	100 lb.	...	60	0 7 0
Figs, per doz.	8 0-12 0	Pears, Eschsch-Boutré (California) lge. cases, 20 per doz.	...	14	0 16 0
Grapes (new), Channel Islands, per lb.	3 6-4 0	do. case, 100	...	4	0-7 6
— Belgium, per lb.	2 6-2 9	Pine-apples, St. Michael, each	...	4	0-6 4
— Gros Colman, selected, p. lb.	4 0	Strawberries, per B.	...	4	0-6 0
Melons, Channel Islands, each...	5 0	— 2nds	...	2	0-3 0

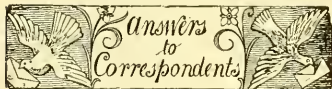
SEEDS.

LONDON: March 31.—Messrs. John Shaw & Sons, Seed Merchants, of Great Malton Pond, Borough, London, S.E., write that naturally more orders now come to hand for Grass and Clover seeds; still the volume of business now passing is under the average, and the present season promises to be a late one. Meantime, prices all round keep exceedingly low. Some remarkable bargains are offering in Russian Red Clover seed, which closely resembles English-grown seed. Alsike well maintains the late advance. Tares are cheaper. The market for Mustard and Rape seed is firm. There is no change this week in Bird-seeds. Peas and Haricots realize former terms.

CORN.

AVERAGE PRICES OF BRITISH CORN (per imperial qr.), for the week ending March 27, and for the corresponding period of 1896, together with the difference in the quotations. These figures are based on the Official Weekly Return:—

Description.	1896.		1897.		Difference.
	s. d.	s. d.	s. d.	s. d.	
Wheat	21 10	27 0	27 0	2 11	+ 2 11
Barley	21 4	22 5	22 5	1 5	+ 1 5
Oats	13 4	16 3	16 3	2 11	+ 2 11



ARTIFICIAL MANURES FOR STRAWBERRIES AND RASPBERRIES: T. E. S. Nitrate of soda or sulphate of ammonia, 200 lb.; precipitated phosphate, 500 lb.; kainite, 1000 lb. per acre.

BOOKS: An old correspondent wishes to dispose by private treaty of the under-mentioned standard works:—*Evlyn's Silva*, 4th edition, by J. Hunter, 1812, 2 vols. 4to, bound in calf, gilt-lettered. *Evlyn's Memoirs*, 2nd edition, by W. Bray, 1819, 2 vols. 4to, bound in calf, gilt-lettered; all four books in good condition. Apply to the editor.—J. G. B. *A Popular Treatise on the Physiology of Plants*, by Dr. Sorauser, translated by Professor Weiss, Longmans (excellent for your purpose). *Elements of Botany*, by F. Darwin (Clay & Sons)—excellent. For *Fragus Dicoxus* of Plants, by Tuben and Dr. W. G. Smith (Logmans). You send to be well supplied.

BRACKEN FERN: T. A. H. Take small portions of the rhizome with buds just starting, and plant them in a light soil mixed with a little peat, if possible. Spore would be a long business.

CHERRIES AND GOOSEBERRIES: P. P. Baummann's May Cherry ripens in the last week of May in the average of years, therefore several weeks before any variety of Gooseberry known to us.

CONIFER SEED-SOWING: W. H. D. All of those you mention may be raised in a large way by sowing in beds on well-pulverised and deeply dug loamy land, the land as it is being dug should be raked with long (4-inch) toothed rakes, so that all large stones come to the bottom of the trench. Other men should follow with rakes of two or three different degrees of fineness, and render the tilth still more fine. If the weather continues fine, the land should be thrown into beds 4 feet in width, and the seeds sown thinly broadcast, and merely covered and no more by finely pulverised soil taken out of the alleys. The seeds should be protected from the sun by spreading thin canvas, mats, pea-sticks, &c., or a large percentage will fail to germinate. The land should be in good heart, but not recently manured; and the German method of raising a leguminous crop—say Lupines—the previous year, and digging it in is excellent in providing a mild kind of manure.

CYRIPEDIUM BOXALLI AND DENDROBIUM WARDIANUM: H. R. Good, but not remarkable in any way.

DISEASED BULBS: Williams. The problem presented by the condition of the bulbs sent is one which is not easily solved. Many of them present externally more than one species of the common sappy-tissue moulds, but these are a consequence of decay and not the cause. Externally and internally most of the bulbs exhibit brown spots of rot, those of the Tulips in the most advanced condition, and upon these the microscope was employed with most success. The tissues, when reduced by the disease to a pulpy condition, present myriads of the small cells of an organism which resembles *Micrococcus amylovorus*, and like that, appears to flourish at the expense of the starch, with which, of course, these bulbs abound. The cells are nearly globose, about 13 millimetres in diameter, either single or in pairs, or four together. When longer than broad, they measure about 14 by 2, so that they exceed those of the above-named *Micrococcus*. These are the only extraneous organisms discovered in the present examination, and the problem to be decided is, whether they are the result or the cause of the decay. That similar bodies are capable of producing disease in plants at the expense of the starch, has been shown by the researches on the Pear blight in the United States, but in the present instance evidence is yet wanting to unite cause and effect. We can only say that the bodies indicated would be an efficient cause, that there are no traces yet found of any other probable cause. But, if they are only resultant from putrefaction, then the true cause has yet to be discovered, of which there is no indication in the present state of the bulbs. It is futile to talk of cure, for nothing can restore the bulbs when thus attacked, it can only be by prevention in the case of sound bulbs, and prompt eradication of all that are diseased. M. C. C.

EARLY VARIETIES OF STRAWBERRIES FOR MARKETING: C. J. S. King of the Earlies, rather small fruit, but good flavour; Royal Sovereign, a good all round variety, and well adapted for market; Auguste Nicaise has large fine-flavoured fruit, and bears profusely. If you like old varieties, there are Keen's Seedling and Black Prince.

ELECTRIC LIGHT: W. This requires careful management, or the plants will be injured. The light should not be too near the plants, and should be enclosed in ground glass. We are not aware of any pamphlet on the subject. Much has been written in the *Gardener's Chronicle* about it, but we are much behind the Americans. The first account of the late Dr. Siemens's experiments was given in vol. xiii, 1880, p. 301, fig. 63. We have not leisure to hunt up all the references that occur in that and other vols.

EUPHARIS-MITE: T. G. This species of mite has nothing in common with red-spider. It infests other bulbs than those of Eucharis. If you will send an infected bulb to us, we will tell you if it has the bulb "mite."

EVERGREEN HEDGE: Pro Bono Publico. According to the decision of the Lord Chancellor and Lords Dwyer and Macnaghten in a tree-logging case, reported in our issue for December 1, 1894, no notice of the intention to lop need be given to the owner of the trees or hedge.

EXAMINATIONS: R. J. Apply to the secretary of the Royal Horticultural Society, 117, Victoria Street, but you are too late, probably, for this year.

FRENCH ON KIDNEY BEAN: H. A. If for a small garden or pot-culture, sow Ne Plus Ultra.

GASTRIA: J. H. H. From the Greek *gastro*, the belly, in allusion to the swollen condition of the leaves; "subvertuosa" means slightly warty; and "punctata," spotted. *Botanical Names for English Readers*, published by L. Reeve & Co., would help you considerably, price a few shillings; or the Supplement to Nicholson's *Dictionary of Gardening*, if you could get it.

HARDY SHRUBS: Correspondent. If you know nothing about the subject, why read a paper on it, and why expect us to coach you up? We should gladly help you if we thought it would be of any use. In the meantime, look at Webster's *Hardy Flowering Trees and Shrubs*, and the same author's *Hardy Conifers, Gardening World Office*, Clement's Inn, Strand.

IVY-LEAVED PELARGONIUM: P. H. We do not find any fungus. You have probably erythred when the sun was shining.

LA REINE TULIP: S. S. C. This variety being white, flushed with rose, owing to something in the soil in your case, or by reason of much exposure to sunlight, may have the rose tint spread over more than the normal area of the segments of the flower. Try what shading with oiled canvas will do for them.

MAIDENHAIR FERNS AND WEEVILS: W. B. The insects infesting the soil are weevils, very difficult to drive out of the pots, as there is nothing that you can apply to the soil to drive them out, but would kill the plants. We should be inclined to place them in a cold-frame for a week or two, and then place them in the shade, protecting them against frost at night, and cold biting winds by day, indeed, keeping a frame over them, but with plenty of ventilation and moist surroundings. Having placed them on a coal-shaft, strew wood-shavings dipped in carbolic acid or coal-tar between the pots, the odour of which may render the frame distasteful to the beetles. The weevil grubs are even more injurious than the perfect insects, devouring the roots incessantly, but you might lessen their numbers by turning the bulbs out and examining them for the grub. If these means are ineffectual, you had better burn the lot and start anew with clean soil from another source.

MUSTARD-BLOSS: R. B. W. It may be obtained from the wholesale seed houses or Mustard manufacturers.

NAMES OF PLANTS: Correspondents not answered in this issue are requested to be so good as to consult the following number.—J. W. F. *Colletia spinosa*, probably. Send them in flower.—L. J. *Pentapteryx serpens*.—B. J. P. *Iris fimbriata*.—S. E. D. 1. *Cypripedium Louisiana*; 2, one of the varieties of *Thelypodium*; 3, *Picea orientalis*.—A. E. Azalea; we are unable to name the varieties of Ghent Azaleas.

ONION: H. A. Danver's Yellow, a good keeper, and not particularly pungent; James' Keeper, and Deptford, if strong-flavoured, very long keepers are required.

PALM WITH SPOTTING ON THE LEAVES: W. N. Nothing can be observed on the leaves that affords the least clue to the cause of the spotting, and we should be inclined to think it is due to the use of artificial manure, to fumigation, or to noxious fumes of some sort.

PHENIX DACTYLIFERA: R. B. W. Unless you have male and female plants, you will not succeed in obtaining fruits, the genus Phoenix being dioecious.

R. H. S. AWARD OF MERIT TO A CLIVIA: The award of Merit given to Messrs. Baldwin & Sons for a fine Clivia at the last meeting of the R. H. S. rightly belongs to Mr. Bennett-Poë. We were misled by the official list of awards.

TOMATOS: E. A. Your plants are affected with some fungus, but we cannot tell which from the specimen sent. We fear the results will not be favourable.

TRANSPLANTED LARGE YEW: W. S. T. Keep them moist at the root, syringe the branches in the evening of dry and hot days, and place a mulch of litter over the roots. Some amount of shortening-back the branches may be an advantage. The trees may not present a pretty appearance for one or two years, but they will doubtless quite recover from the removal.

COMMUNICATIONS RECEIVED.—A. B.—W. H.—W. T.—A. C.—C. de B., Tout vient à qui sait attendre.—Stanley Edwards.—J. A. Has, Carter & Co.—J. & Co., Somerset (next week).—D. W. T., we hope to have exact opinion shortly.—J. A.—A. J. Moore.—M. C. C.—G. B.—J. J. W.—E. C.—L. B.—J. B.—T. W.—M. E. B., We intend.—*Journal of Horticulture*.—A. O.—R. L. H.—G. H. M.—H. M.—T. B. K. J. R. J. G. M. E. W. J. F., W. H. S., replies next week.—T. Carver.

SPECIMENS, PHOTOGRAPHS, &c. RECEIVED WITH THANKS.—T. B. K.—Thos. Christy.—E. F.

CONTINUED LARGE INCREASE IN THE CIRCULATION OF THE "GARDENERS' CHRONICLE."

IMPORTANT TO ADVERTISERS.—The Publisher has the satisfaction of announcing that the circulation of the "Gardener's Chronicle" has, since the reduction in the price of the paper, increased to the extent of more than 90 per cent., and that it continues to increase weekly. Advertisers are reminded that the "Chronicle" circulates among COUNTRY GENTLEMEN, and ALL CLASSES OF GARDENERS and GARDEN-LOVERS at home, that it has a specially large FOREIGN and COLONIAL CIRCULATION, and that it is preferred for reference in all the principal Libraries.



THE

Gardeners' Chronicle.

SATURDAY, APRIL 10, 1897.

SOME GOOD ROSES TO GROW FOR THE GARDEN.

NOTWITHSTANDING the lists which are continually given in the various gardening publications, and notwithstanding the official catalogue of the National Rose Society, it is remarkable how often one is asked what Roses would you advise me to grow? The answer depends upon so many different circumstances that it is not surprising that this must vary considerably. It may be thought that the present is an unfavourable time to entertain such a subject, as the time for planting is past; but is it so? Of course, the month of November is the time usually allotted to that; yet I have seen very good results from what I may call spring-planting, especially where the grower is near to a nursery where he can obtain his plants without the necessity of packing them up for a railway journey—and growers for sale have so greatly increased in number that there is very little difficulty in following out this plan. [This article should have been published at an earlier date, had not pressure on our space prevented it. Ed.]

The very first thing that has to be considered in this connection is, for what purpose are the Roses required? Are they for exhibition purposes or for home enjoyment, for it is very astonishing to see how the amateur, who never entertained the idea of exhibiting, gradually drifts into it, and therefore he does not want to be advised to choose anything except exhibition flowers; and he is also more inclined to ask for novelties than for any selection of the best older kinds. And so it comes to pass that it is mostly selections for exhibition purposes that are given to the public, and thus many varieties which are admirably adapted for the garden are excluded altogether.

Another question is, How does the enquirer mean to grow? Does he mean to take any pains with his Roses, such as the careful grower for exhibition does? Does he mean to disbud them, to look after the Rose-maggots, and keep them clear of aphids? or does he mean to put them into the ground just as he would any flowering shrub, and leave them to their fate? The answer to the question will also depend considerably on the locality. The most beautiful and useful section of the whole tribe I believe to be that of the Tea and Noisette Roses, but there are some localities in which it would be heart-breaking work to try and grow these. This will not depend,

as it is often thought, upon the northerly position of the garden, for I have seen them flourishing in great luxuriance in Wigtonshire, but then that county is under the influence of the Gulf Stream, and consequently its winters are not severe; so that unless in very bleak situations I do not think anyone need be deterred from attempting their culture. One sometimes hears and reads curious statements about them, thus, for instance, I read the other day that there are but few of them that open well out of doors; this is simply absurd. There are a few Teas which do not open well, but I should hardly think they are more than could be counted on the fingers of one hand; and it is just the same with H. P.'s. There are a few of them which are described as fair-weather Roses, that is, in wet weather the petals become fastened together, and being of a light texture they will not open, Jean Ducher, Souvenir d'Elise Vardon, and Madame Hippolyte Jamin, are of this character; but very often this complaint is made where Roses are disbudded for exhibition purposes, when consequently the blooms left are larger and with more petals. But one need not trouble oneself about these few, for what a wealth of beauty there is in the class! Take, for example, that most beautiful Rose, Marie Van Houtte, vigorous and floriferous; what shoots it throws up from early spring to late autumn! each shoot producing a number of blooms of exquisite cream colour, with, when in its best form, a beautiful edging of pink. I have seen bushes of this 6 or 8 feet high and nearly as much through, and at whatever time blooms were wanted, these bushes furnished them. Then there is that old and well-nigh forgotten vigorous grower, Homère, with its curiously-crippled bud and light-coloured flower, edged with rosy-pink. Nothing in the whole range of Roses surpasses in colour Ma Capucine, not even the Austrian copper exceeds it in brilliancy; it is very difficult to describe its colour, but the description given to it in the National Rose Society's catalogue comes as near to it as anything I can say. It is there said to be "bronzey-yellow, shaded with red;" unfortunately, it is not vigorous, and in some places difficult to keep, and if planted against a wall it loses a great deal of its colour. There is another Rose of recent introduction, which, for some unaccountable reason, has been classed among hybrid Teas—I mean Gustave Regis: the flowers are of a beautiful nankeen yellow, with a long pointed bud; the petals are few in number, and consequently it soon opens, when it becomes useless—at the same time it is so beautiful in bud, it cannot be well dispensed with. Dr. Grill is another of these curiously coloured Roses, it is not very vigorous, but as it is free flowering, and of a distinct shade of colour, it should find a place in the garden; nor must I omit L'Idéal, which is, however, more of a Noisette than a Tea, in colour a beautiful metallic-red tinted with yellow and Apricot; in fact, it is one of those indescribable colours which we often find in this class. Madame Charles, again, is an old Rose, but a very beautiful one; the colour is a bright Apricot, it bears a striking resemblance to Safrano, but is more vigorous in habit. Madame Chédane Guinousseau is another Rose that I would strongly urge amateurs to grow, it gives a never-failing supply of buds at all seasons; it is not large, but it is very bright and pretty, the colour being a clear bright yellow, and the bud makes a fine buttonhole. I have written so lately upon the subject of

climbing Roses, and therefore think it unnecessary to mention the numerous beautiful varieties of the Noisette section, which, wherever there is a wall or fence ought to find a place in the garden; nor have I gone into the splendid exhibition varieties of Teas which are always sure to be given when a selection is asked for, but have confined myself to those which are desirable for especially making a show in the garden.

Of the many wonderful beautiful varieties in the hybrid perpetual class there is a considerable number which, although counted as exhibition varieties, are also very effective for garden purposes; for instance, what more beautiful Rose for the garden can there be than old General Jacqueminot, which was sent out by Rousselet in 1853—forty-four years ago? it has been the parent of a good many Roses since, and yet one often sees it now carrying off the medal for the best Rose. As a garden Rose there are few that can rival it; it is vigorous in habit, free-flowering, brilliant in colouring, and very fragrant. There is another Rose which, because it is not an exhibition variety, is often overlooked—I mean Gloire de Margottin, the last Rose raised by my old friend Margottin, of Bourg la Reine, one of the shrewdest and keenest of French rosarians; indeed, I can only recollect one other who could vie with him in this respect, Lacharme of Lyons—they were both rosy diamonds, but I recall with much pleasure many a "crack" I had with Margottin in his pleasant garden. Gloire de Margottin is very bright, somewhat loose in habit, but very vigorous, and therefore suitable for a pillar. Empereur de Maroc is an old Rose, which seems to be nobody's child, as it does not occur even in the National Rose Society's catalogue of garden Roses, yet I know of no darker Rose, or one which, from its free-flowering qualities, is more satisfactory; it is of a rich deep velvety-crimson colour, reminding one in colour of that very uncertain Rose—Sir Rowland Hill. Gloire des Rosamanes, again, is a most brilliant coloured Rose, closely approaching scarlet, not very full; indeed, it may be better described as a semi-double Rose, and there can be little question, I think, that in one way or another to its influence may be attributed some of our most brilliant H.P.'s. There is a class of H.P.'s which may be considered rather as hybrid Noisettes. They are usually classed amongst the H.P.'s, of which I think Boule de Neige may be regarded as the most favourable specimen; it is of vigorous growth, flowering in clusters, and as its name imports, a pure white, and therefore forms a striking contrast to some of the Roses already mentioned, and for this reason, and its freedom of flowering, ought not to be omitted. Gloire of Cheshunt, raised by Messrs. Paul & Son, is a very brilliant shaded crimson-coloured Rose, and, for its habit of freedom of flowering, makes a capital bush. I hardly like to omit John Hopper; for, although in its colour there are many varieties which exceed it, I have always felt a sort of paternal fondness for it, as it was by my advice that Mr. Ward, the raiser, after his disappointment at its rejection by the Royal Horticultural Society, was induced to bring it forward again, when it was duly recognised, and, I believe, brought considerable gain to the raiser. It is a very early Rose, and very sweet. Of course, there are many other Roses of other classes one might mention; my object has been rather to recommend some which I think are pretty sure to give satisfaction to those who love a garden. *Wild Rose.*

NEW OR NOTEWORTHY PLANTS.

EPIDENDRUM PORPHYREUM, *Lindley*.

Of the large genus of Epidendrum, there is but a very limited number of species which, through their large, ornamental, or finely-coloured flowers, are of value to horticulturists. Of this small number, *E. porphyreum* stands in the foremost rank. Botanically, this species belongs to the Polycladia, with large pyramidal thyrse; but in regard to the appearance of the stalks, leaves, thyrse, and form of the flowers, it has a strong resemblance to *E. paniculatum*, Ruiz et Pavon, excepting that the flowers are somewhat bigger, and of very different colour. As a species, it is easily distinguishable by some marked discrepancies of the lip. The plant forms a dense tuft of from six to fifteen stems, having a height of 50 to 100 cm., and a thickness of the little finger; and they are distichously set with herbaceous, oblong, upper-sides brownish-green, under-sides magenta, purplish leaves. The panicle is many-branched, pyramidal, with arching tips, often 25 cm. high, and very thickly set with flowers. The sepals are oblong, spatulate, of a beautiful shining reddish vitelline colour. The petals are of same shape and colour, but much narrower. The lip is trilobate, sometimes of tender rose tint, but mostly of a delicate orange-yellow colour. The column is of the same colour as the lip. *E. porphyreum* is found in Colombia and Ecuador, but is very rare. It grows in dense woods on trees, from 1900 to 2400 metres (6175 feet to 7800 feet) above the sea, and flowers from November to February, when it is a charming sight to behold these localities. In cultivation it requires the same kind of treatment as *Odontoglossum cirrosium*. *F. C. Lohmann*.

FLORISTS' FLOWERS.

EARLY SINGLE TULIPS.

On looking over the extensive display of early single Tulips staged in the Drill Hall at the last meeting of the Royal Horticultural Society, one could not help being struck by the fact that but little of real novelty has put in appearance during the past few years, which is perhaps not surprising, seeing how high is the quality of many of the standard varieties, and the consequent difficulty of obtaining advances upon them. Among the white-flowered Tulips, the white form of Joest Van Vondel, which it is believed emanated as a sport, is deservedly at the head of the list, being much deeper in the petals than the old white Pottebakker, and purer in colour. This, and the crimson-scarlet and white Joest Van Vondel, make excellent bedders, as can be seen in our London parks; while the stiff stalks and thick petals of White Pottebakker enable it to withstand rough weather. White Lady is very large, and somewhat coarse. Nelly is a pleasing white, but not so pure as the white Joest Van Vondel, and is said to force well. The Silver Bride of Haarlem is a very fine white, well deserving of culture, and is probably a little dear in price at present.

Among the yellows, Ophir d'Or is supreme, large, rich in colour, and strikingly handsome. Yellow Pottebakker, when purely of a self colour, is a most useful variety; and the old Golden Prince holds its own for bedding purposes. Thomas Moore, an old terra-cotta self, was seen in Messrs. Cutbush & Sou's collection, distinctly feathered with amber, and though bearing the old name, is apparently distinct enough to be classed as a variety.

Of bright crimson varieties, nothing can touch Vermilion Brilliant; it is prominent for colour and striking appearance. Joest Van Vondel will sometimes come as a maroon self, very fine and deep. Bacchus and Couleur Cardinal, both dark crimson, are excellent bedders, dwarf, and standing rough weather well—the last named the latest in flowering. Koh-i-Noor, rich, dark scarlet, is somewhat new, but will take high rank in this section.

Of purple and violet shades, Vander Neer, bright violet-purple, and Wouvrman, deep purple, still hold

their own, whether for pot-culture or bedding; beds of the two named are always features in our London parks.

Proserpine is unbeaten for its large and handsome rose-carmine flowers, and as an effective bedder it is almost without a rival. Like Vermilion Brilliant, it is in so much request as to be somewhat high-priced. La Géante, a large bright rose variety, is highly spoken of.

Among the edged flowers, for size and beauty there is nothing like Keizer's Kroon, and a large bed of it containing several hundreds of bulbs is a sight long to be remembered. It has one failing—the delicate yellow feathering becomes scorched under the hot sun. It is the largest of the early single Tulips, and one of the finest for exhibition purposes. Cerise Griedelin is a beautiful variety—a pinkish-rose ground, sometimes deeper, feathered with white. Le Matelas, deep rose, edged with white, is very pleasing also.

Of distinctly striped Tulips there are few. Roi Pépin, when true to character, has a white ground striped with red or carmine, and is decidedly handsome. Van Vondel will sometimes come striped, but it is not a fixed character. Bride of Haarlem is a good and useful old scarlet-and-white striped variety.

There are several handsome flushed varieties, such as Fabiola, deep rose, feathered and flamed with white; Rose Gris-de-lin, delicate pink, flamed with rose; La Grandeur, white, with flushes and flames of rose-pink, but it has somewhat pointed petals; and Prince of Austria, almost a self, orange-red, flushed with a deeper colour, more especially on the inside of the petals.

The six finest early single Tulips are Keizer's Kroon, Ophir d'Or, Proserpine, Vander Neer, white Van Vondel, and Vermilion Brilliant. *R. D.*

KEW NOTES.

RHODODENDRON METTERNICHI. — Although not exactly a new plant, this is one of the rarest and least known of the species in cultivation. It is interesting as one of the very few true evergreen Rhododendrons found wild in Japan, there being only one, or at most two, other species indigenous to that country. The Azalea section of the genus is, on the other hand, well represented. *R. Metternichi* is now in flower at Kew, and proves to be an ornamental species, although in the view of many a drawback will exist in its flowering as early as the end of March. The sharp touch of frost on March 29 did, indeed, destroy several trusses of flowers then open. The leaves are leathery and very firm, 3 to 4 inches long by 1 to 1½ inch wide, with a cartilaginous margin and an abruptly pointed apex; beneath, they are covered with a felt-like substance, which varies in colour from brownish-white to deep reddish-brown; the petiole is 1 inch long and transversely wrinkled. The flowers are set rather loosely in the truss, and are borne on stalks 1 inch long, the pale pinkish-purple corolla measuring 2 inches across. The green calyx is very small and inconspicuous. Siebold figured this Rhododendron in his *Flora of Japan*, t. 9, and depicts it with seven segments to the corolla. The living specimens at Kew, as well as the dried ones in the herbarium (gathered by Maximowicz and Marice), have only five. Siebold describes it as "inhabiting the mountains of Northern Japan, being found most abundantly in the Nikko Mountains. It is planted about the tombs of the Emperors of Japan, and in the groves that surround sacred places." Professor Sargent saw it also in great masses by the shores of Lake Yumoto. Of the species in cultivation, I should judge it to be most nearly allied to the Caucasian *R. Smirnowii* and *R. Ungeri*.

PRUNUS SUBHIRTELLA.

In 1862, this Cherry was collected in Japan by Richard Oldham (the Kew collector), and subsequently by Maximowicz, but until within the last few years it appears to have been quite unknown in cultivation. There is a single young tree at Kew which flowered there in April, 1886, and towards the end of the year a figure of it appeared in the *Botanical Magazine*. It is now flowering for the second time, and although as yet too small to show its full beauty,

it is of great promise. It grows vigorously, and is perfectly hardy. The habit is erect, and the pale rose flowers—each half an inch across—appear before the leaves. The latter, however, when fully grown, are about 3 inches long, ovate, toothed, and pointed. This Cherry has many points of resemblance to the lovely *P. pendula*, whose drooping branches are now laden with delicate rose flowers. The flowers of the two are, in fact, identical, but whilst the leaves of *P. pendula* are glossy, those of *P. subhirtella* are dull green, and more distinctly hairy both above and below. The habit supplies the most obvious distinction, but the fruits would probably be needed to definitely settle whether they are specifically distinct.

RHODODENDRON CAMPYLOCARPUM.

The more common colours among evergreen Rhododendrons are, of course, rose-red, purple, and white; pure blue is entirely absent, although some of the purples decidedly approach that colour. Yellow, especially among the larger species, is rare, and it is on account of its having flowers of that colour that this Himalayan Rhododendron deserves notice. Its nearest ally is the crimson-flowered *R. Thomsoni*, and it has, like that species, leaves whose underside it of a vivid glaucous hue. It may even, out of flower, be mistaken for it, but, as a rule, the leaves of *R. campylocarpum* are smaller, and of a paler green on the upper surface. The flowers appear in a loose truss, each one being about 2 inches across. The yellow of the flowers is of a somewhat primrose shade. A couple of plants are in flower in the Rhododendron dell at Kew. As the species has been grown outside at Kew for several years (in sheltered positions, but without artificial protection), it may reasonably be included among the hardy Himalayan species. To those whose gardens have been found to suit the better-known *R. Thomsoni*, its distinct colour may command it. The two are of the same degree of hardiness.

PRUNUS TRILOBA.

Of all the shrubby *Prunus* the double-flowered variety of this species is, in my opinion, the most beautiful. On a wall at Kew, an old specimen, probably one of the oldest in the country, is each spring a mass of blossom, and just now it is in its greatest perfection. Every shoot is loaded with rose-white flowers which, although double, are not so much so as to give them the lumpy appearance that spoils so many double flowers. The leaves are toothed, and a deeper indentation at each side frequently gives them a slightly trilobed character, to which the name refers. This double-flowered variety was originally introduced by Fortune from China in 1857, but until quite a recent date, the single-flowered typical plant was unknown in Europe. It was, a year or two ago, obtained for the Kew collection, and is now flowering there. It has almost pure-white flowers, which, besides being single, are much less in diameter than those of the other. The leaves are of the same shape and character, but small; the whole plant, indeed, lacks the strength and vigour of the double-flowered variety, and cannot be compared with it in beauty. *H. J. E.*

MELON-GROWING IN HOT-BED FRAMES.

In recent years Melons have been less and less grown in frames, the water-heated bed in a span or lean-to house being more convenient and handy, and for early fruits this mode of cultivation is indispensable. However, there are still gardeners who must grow their Melons in frames, and they manage to produce excellent fruits after May. It is a question of warmth, together with efficient ventilation—not an easy matter in the spring, with the ordinary hot-bed.

Most gardeners know how to prepare the materials for making a hot-bed, and they are aware that the careful preparation of the leaves and stable manure is a matter of importance. If the stable-manure is much used before it reaches the gardener, less of it should be used than if it be only stained—say one-third to two-thirds of tree leaves; and in the latter

case manure and leaves may be equal. A hot-bed should not be less than 3 feet 6 inches deep at the front, or 4 feet at the back; and if it can be made in a trench sufficiently wide to accommodate the bed and its linings, the heat will be proportionately

with a large proportion of the long straw towards the outside of it, place the frames thereon, and wait till the heat rises and the rank ammonia fumes have passed off, by which time the heat will have declined somewhat.

the hills, others boards, slates, &c., 3 feet in width, so as to keep the roots in a measure from getting into the manure too soon, and prevent uneven sinking of the soil. The latter may contain lime-rubbish, and if it be poor loam a small quantity of horse-dung in a rotten state may be added. Some gardeners plant two Melon-plants together, but I prefer planting them singly at 18 inches apart, training one towards the back and the other towards the front alternately, the soil being brought pretty near to the glass, so that the plants have abundance of light. If the heat remains right no shading will be required, if due attention be paid to giving air; but should the plants flag, a slight shade for an hour or so when the sun is strong should be employed till the roots have taken to the new soil, after which no shading should ever be used. Newly-made hot-beds always require care at first, the heat rising rapidly by sunheat, and so scalding the leaves. It is advisable to always leave a small amount of air on at the back of a frame at night.

In training the young Melon-plants some gardeners nip the points above the third leaf, the result being that two shoots are made, which are trained one upwards and one downwards, and so soon as 2 feet more growth have been made, the points are again nipped, when the side laterals break strong, some of these may be removed altogether, leaving say, three or four on each side—these, as a rule, will show fruit; 70° by night, and 80° by day, will suit the growth. If, however, these lateral shoots produce no female flowers, they must be stopped again at the first joint, when the next break will almost be sure to bring them.

In growing Melons in frames, it is of importance to keep the foliage thin by constant thinning, not leaving it for a week or longer, and then have a great mutilation of the plants carried out. If the line is not to be stopped at the third leaf, then train one bine up and the other downwards, and when they have grown to within 8 inches from the ends, then pinch out the points, train out a selected number of laterals, and stop them at two joints above the female flowers. Keep the frame a little drier while setting is proceeding, and use the pollen when both male and female flowers are dry. The plants ought not to get dry at the roots during this period, for I have observed that by keeping the soil in a fairly moist state, there is little trouble in getting plenty of fruit to set. With most varieties, four good Melons on a plant are sufficient; and this number will ripen quicker and be better in flavour than a heavier crop.

Air must be admitted carefully at all times during early growth, and moisture afforded more or less according to outside conditions. In hot, dry weather the frames may be closed early, say, at 2 P.M., after gently dewing the plants over-head with tepid water. The fruits should be raised up towards the glass on flower-pots, &c. The splitting of Melons is due in a great measure to the soil getting very dry and then being deluged with water. When the fruits are approaching ripening, the soil should be allowed to get fairly dry. *H. Markham.*

FRITILLARIA PLURIFLORA.

WE are indebted to Mr. Gumbleton for the privilege of figuring this elegant species. The illustration (fig. 76) tells its own tale; but, for the convenience of the reader, we append the description from Watson's *Flora of California*, vol. ii.:

F. pluriflora, Torrey.—Bulb of large, thick scales, a half inch to an inch long; stem stout, a foot high, or more, four to twelve-flowered; leaves eight to fifteen, nearly covering the stem, somewhat verticillate, narrowly lanceolate, 3 or 4 inches long; flowers nodding on long pedicels, uniformly reddish-purple; segments somewhat spreading, 9 to 12 lines long, oblanccolate; nectaries obscure; stamens unequal, 6 or 7 lines long, shorter than the style; anthers 2 lines long. Benth., *Pl. Hartweg*, 333; Baker, in *Journal of Linnean Society*, vol. xiv., p. 270; on the *Upper Sacramento*, Hartweg; and on the *Feather River*, Fremont. Peculiar in the size of its bulb.



FIG. 76.—FRITILLARIA PLURIFLORA.

economised, as compared with a bed built on the level, with the wind having access to it on every side. In tenacious soils such trenches or pits must be drained in some manner.

Having made the bed in a fairly solid manner,

The soil-hills of sound loam may now be put in, and a further wait made till these get warmed, no planting being done till the thermometer, when planted in a hill 6 inches deep, shows a warmth of 35°, not higher. Some gardeners use turves under

ORCHID NOTES AND GLEANINGS.

STENOGLOTTIS FIMBRATA.

This pretty terrestrial Cape Orchid has foliage that is undulated at the margin, and arranged in a clustered mass at the base of the stem. The spike is usually 9 inches in height, and bears a number of rosy-pink flowers, the most noticeable part of which is the blotched and spotted purple-coloured trifold lip. It is a plant easily grown in the intermediate-house if afforded a loamy compost and a few crocks, so as to give it ample drainage. Propagation is by means of side-growth. A good figure of this plant is given in the *Bot. Mag.*, t. 5372. R. L. H.

EULOPHIELLA ELISABETHÆ.

Having read the remarks of several writers in the *Gardeners' Chronicle*, I should like to state our method of treatment, which seems to suit the needs of the plant exactly. The plants are cultivated in a warm, moist corner of the East Indian-house; they are afforded liberal waterings at the roots whilst in active growth, and never at any time allowed to become dry. The plants are grown in flower-pots, in a compost consisting of fibrous peat, sphagnum-moss, and leaf-mould, all being chopped up and well mixed together with some small crocks, the pots three-parts filled with drainage material. There is a specimen of *Eulophiella Elisabethæ* in flower in these gardens which possesses three stout flower-spikes, the longest of which measures 17 inches, and has twenty-nine expanded blossoms and unopened buds, and the other spikes have each eighteen flower-buds. The largest leaf is 3 feet 2 inches long and 2½ inches broad. D. Masterton, gardener to J. C. Parr, Esq., Grappenhall, Heyes, Cheshire.

ORCHIDS AT CAMDEN WOOD, CHISLEHURST.

Those persons who are acquainted with the extensive collection of Orchids at this place can speak of the intelligence and skill of the cultivator. On the occasion of a visit made to the gardens late last month, many rare and beautiful Orchids were observed in bloom, forming an imposing display. Amongst others, *Cypripediums* were conspicuous: *C. Harrisonianum* superbum, *C. Lathamianum*, *C. Calypso* (Oakwood var.), *C. pulchellum rosenm.*, *C. Mesasiaticum*, *C. Creon superbum*, and *C. superciliosum*. Of strange and varieties of *Ocylia* there were *C. Trianei*, *Robert Measures*, *C. T. Sandersæ*, *C. T. sila*, all very good and distinct. A plant of *Lælia cinabarinaria* was also conspicuous; many forms of *Dendrobium nobile* were noted, including *agrard D. n. nobiliss* and *D. n. Sanderiana*; *Cologne cristata alba*, *Cymbidium Lowianum superbum*, a gem of a plant; the beautiful crosses, *Cymbidium eburneo-Lowii*, and *C. Winiannum*, valuable and distinct Orchids that flower freely at this season. *Odontoglossum crispum* in fine form were noted, including the variety *O. c. Arthurianum*, which received a First-class Certificate in March, 1896; and *O. c. Princess*, which last year was awarded an Award of Merit; *O. c. Cooksoni*, the lovely *O. c. Dormanianum*, and numerous forms of *O. Roscii majus*, *O. Rozeii*, *O. adersperum*, *O. Hume-anum*, well-flowered specimens of *Sophranite grandiflora*; and very many were the novelties not at present in flower, as for instance, *Cypripedium insigne Sandersæ*, and *C. i. Sanderiana*, *C. Lawrenceanum Hyenanum*, &c.; and amongst *Cattleyas*, *Lord Rothschild*, *Clusia superba*, a Veitchian hybrid between *C. gigas* and *Lælia elegans* Turneri; *Cattleya Prince of Wales*, *C. Broomfieldensis*, *Lælia Cattleya eximia*, *L. C. Fowleri*, and others of value. The condition of the collection leaves nothing to be desired. Mr. Robbins, the gardener here, is turning his attention to hybridising; many good hybrids are fast arriving at the flowering age. Alfred Oatman, F.R.H.S.

DENDROBIUM × RUBENS GRANDIFLORUM.

Dendrobium × rubens was obtained by Mr. Jas. Cypher by crossing *D. × Ainsworthianum* Leachianum with *D. nobile nobiliss*, and the beautiful and

richly-coloured cross was described in the *Gardeners' Chronicle*, February 25, 1893. Some more recently-flowered plants of the same batch have produced another form which has flowers much larger than the original, and to which the name *grandiflorum* has been attached. A fine flower sent by O. W. Law-Schofield, Esq., New-Hall-Hey, Rawbassall, Manchester (gr., Mr. Shill), proves that the ability to give large flowers is constant, at all events, when the subject is properly grown. The form of the flower, and especially of [the large downy labellum, with its dark crimson-purple disc and rose-purple apex, is like a fine *D. × Ainsworthianum splendissimum*. The size and bright violet-purple colour of the sepals and petals resemble *D. nobile nobiliss*.

A precisely similar variety is also sent by Mr. Charles Maynard, gr. to Mrs. Ames, Langwater, North Easton, Mass., U.S.A., with the memorandum that it was obtained from *D. nobile nobiliss* × *D. × splendissimum grandiflorum*.

CYRTOPODIUM PUNCTATUM.

The terminal portion of an inflorescence of this fine old Orchid, kindly sent by J. Fineberg, Esq., Sandy Mount, Birkdale, shows its peculiar character of producing large and showy yellow floral bracts, spotted with red-brown, in a very prominent manner. Here and there a perfect yellow and brown flower appears, but in the majority of instances the short lateral branches destined to bear flowers have either wholly failed, or the flowers are abortive and inconspicuous. But the beauty of the inflorescence does not suffer, for several of the bracts are produced together, and form what any one not inspecting it closely would take for flowers, and very pretty ones too. Some of the larger bracts are 2½ inches long and 1½ inch broad. The plant is also known in some gardens as *C. Saintlegerianum*.

EPIPHYLLUMS.

ATTENTION has been directed in the *Gardeners' Chronicle* to the beauty of this useful group of plants, together with an expression of regret that so few are grown. Some years ago I grew the best varieties largely, and in the course of years I have assisted in grafting some thousands. *Apropos* of the latter part of the work, I have still a vivid recollection of potting some 3000 stocks of *Pereskia aculeata* in 3-inch pots, ready for grafting later on, and well remember the pain inflicted by their very sharp, and to me, poisonous spines. As the method adopted differs slightly from that described in your recent issue, I may be allowed briefly to refer to it here. For grafting purposes only the one stock, viz., *Pereskia aculeata*, was then employed. [P. Bleo, figured in the *Gardeners' Chronicle* recently, is better. Ed.] Fresh young growths of these were taken as cuttings when 4 inches long, and inserted in very sandy soil in pots heavily drained. At all times water was given sparingly; the cuttings being inserted at any time when procurable, but preferably late in the summer. With little or no care the majority of these were soon rooted, and when this ensued a quick growth followed, and the plants were potted usually in the spring, singly in 3-inch pots, the plants being topped at from 12 to 13 inches high according to strength, and a straight stick put to each. Early in May the *Pereskias* were placed in frames in the open, so as to secure a moderately firm growth, and be ready for grafting in the autumn ensuing. The "spring" is given as the time for grafting, whereas late autumn was always preferred in my own experience, for the reason that the growths were then well matured without any excitable tendency, as may be expected in spring with returning growth. The grafting is very simple, consisting merely of taking the pot with stock between the knees (the operator being seated), cutting off the head at the required height horizontally, and then making a slit an inch or so deep, longitudinally, when the graft was in readiness. One section only of the flattened pieces of

growth was employed as scions, and these generally of the current season's growth, so as to purposely avoid the hard midrib of the older stems. With a sharp knife a slight shaving of the bark was removed from either side of the midrib of the scion, the stock opened and the graft inserted while the viscid sap remained fresh. Care was taken, as far as circumstances permitted, not to cut beyond the midrib in preparing the scion, the latter being always inserted centralwise in the stock so as to insure a good footing on the one hand, and a head uniformly balanced on the other. The scion may be secured in position by the use of raffia or by pinning to the stock with the spines of the stock—if with the former, it must be done lightly, or the soft succulent growth is cut right through. In any case, however, the use of a spine will keep the scion in position while the tie is being made, and may also remain where placed. No grafting wax or similar material is at all necessary; and when the grafting is finished, a close frame in a greenhouse at a temperature of 45° or 50° will suffice for about three weeks, when, if all goes well, the union will be effected. The plants may then be placed on the stages in the greenhouse, affording water very sparingly. Late in March, or early in April, these freshly-rooted plants may be repotted into 5-inch pots, using loam as the principal, with plenty of grit and mortar-rubbish, and about one-sixth part of peat and charcoal. Potting or repotting must always be carefully done, as not infrequently the breaking of the ball of earth will cause the plant to shrivel and die, as roots are only very sparingly produced. One item in the culture of these plants as now advocated was a cool temperature at all times, the plants being always brought into bloom in a rather cool greenhouse with a temperature of about 45°, or a little more, the plants flowering through November and December each year, and lasting a long time in fine condition. There is no need to forward any of these in a warmer house, as suggested by your Cheshire correspondent, as there is considerable difference in the varieties themselves in this respect where a collection is grown, and where the flowers are opened in heat, they are not so durable after. Throughout the summer months, all the plants, young and old, were grown in a sunny frame in the open, air being given freely, water at the root sparingly, and on the hottest days the plants were gently sprayed over with water from the syringe at closing time. In this way a free compact growth was secured, in which firmness, as also short sturdy stems were generally noticeable, while an abundant flowering was always secured. Firm potting is an essential in the culture of these plants, and frequently failures may be traced directly to a soil conspicuously loose about their roots that retains moisture far in excess of the requirements of the plant. Indeed, failures generally may be attributed to, firstly, an overmoist soil at all times; secondly, too much heat, and loose potting. During the autumn months, when these plants are at their best, nothing is finer for decorating the greenhouse or conservatory. It is worthy of note, that by the above mode of culture the plants were generally freely set with bloom-buds when brought from the frames to the greenhouse, but on stocks other than this, or again on their own roots, the plants flower at different periods, as may be expected. J.

EPI-CATTELEYA × MATUTINA.
(CATTLEYA BOWRINGIANA ♀, EPIDENDRUM RADICANS ♂.)

Not the least interesting point about the work of the hybridist is the unexpected results which are produced during his labours. Few who were asked to describe what they considered the progeny of *Cattleya Bowringiana* as a seed-bearer crossed with *Epidendrum radicans* would be like, would venture to picture to themselves a plant so like the male parent, and so utterly unlike the one which bore the seed as *Epi-Cattleya × matutina*, exhibited by the raisers, Messrs. Jas. Veitch & Sons, Ltd., of Chelsea, at the Royal Horticultural Society on March 23, proved to be. A glance at the illustration (fig. 77) shows that

the plant has much the same habit as *Epidendrum radicans*, even to the air-root bearing characteristic of that species. The base of the stem showed a tendency to thicken, which may increase with age, but up to the present there is little evidence of the *Cattleya*. In the flowers, too, it will be seen that the character of the labellum does not appear to be

NOTES ON THE NARCISSUS.

(Continued from p. 200.)

DISEASES OF THE NARCISSUS.—A very great deal has been written of late years, since *Narcissus*-growing for pleasure and profit has become so general, upon the so-called disease "basal rot," its causes and cure,

with its own ascertained or possible antecedents, but simply the failure of it to act in the plant when its environment is found unsuitable. When an entire genus of plants has been searched out and brought into cultivation, it is not surprising that the welfare of some of its varieties should be found to depend upon the presence of certain special conditions difficult to determine and to supply when found. We have in our gardens *Narcissi* directly imported, or the offspring of importations, from lands as far apart as Switzerland and North Africa, from the sea-level, and from 6,000 feet of mountain altitude, so no marvel if they are not all quite at home in England. The disease (the word is convenient, though inaccurate) is not a fungoid disease propagated by spores, and is not contagious. No single explanation of its presence, though every explanation may be true in part, covers the whole ground.

The one most commonly offered is that this failure results from the application of crude ammoniacal manure, and it is true that the white trumpet *Daffodils*, most wild *Narcissi*, and the *N. spurium* section, such as *Golden Spur*, sicken in ground loaded with rank farmyard manure. The sand of the Dutch bulb-farms has for many generations been very heavily dressed with cow manure for the cultivation of *Hyacinths* and *Tulips*; and bulbs of *Golden Spur* coming from Holland commonly have a black, almost charred appearance, and to the practised eye show clear signs of the imminence of basal rot, unless given a change of soil. But it is by no means universally true that the *Narcissus* dislikes nitrogenous food. The large growers in the Thames Valley bring back from London in their market vans enormous quantities of fresh stable-manure, and plough it into their *Narcissus* quarters before planting, and the growth is benefited by it both in flower and bulb. On an extensive *Narcissus* farm in Mount's Bay, Cornwall, I was this spring shown an acre of reclaimed marsh-land which had received no less than a ton of quarter-inch bones, and a liberal dressing of woollen refuse. The bulk of such manure is phosphatic, and gradual in action; but the plants were evidently fastening on, and greatly enjoying the large percentage of immediately available nitrogen. That a glut of nitrogenous food is the sole cause of basal rot is sufficiently disproved by the fact that a very large proportion of my own seedlings invariably die in this way before flowering, though always planted in beds of pure loam, burnt soil, and other non-nitrogenous material. It is certain that some *Narcissi*, liable to basal-rot in cultivation, will establish themselves healthily in grass; and this fact is often alleged as a proof that the sickness is induced by rich soil. But in my garden these kinds die out if planted in the very same turf broken up and tilled without the addition of any manure whatever; and it is difficult to believe that such ground absorbs, in one season, sufficient nitrogen from the atmosphere alone to poison the plants. It is my belief that the protection against frost given by the thick matting of grass fibres has much to do with the well-being in turf of such *Narcissi*. This view is supported by the observed fact that my garden is comparatively free from basal-rot after mild winters, and especially when the young foliage has escaped injury by frosty winds in early spring.

I have often been struck by the fact that the *Narcissi* most prone to this sickness all bear seed with great regularity, and in abundance; also that some of them, e.g., *pallidus precox*, increase slowly or scarcely at all from the bulb. May it not be argued from this, that in our endeavour to multiply *Narcissi* solely by bulb-division we are violating Nature's provision of increase by seed; and that the rational and successful way of growing many kinds is by seed?

Basal-rot has been by more than one writer attributed to the attack of mites (*acari*), because they may not uncommonly be discovered in the decayed substance at the base of affected bulbs. It is not certain that the mites, having been attracted by diseased bulbs, will not then pass on to and injure adjoining sound ones, but, from the very large number of decayed bulbs examined by myself and others microscopically, and found to be without



FIG. 77.—*EPI-CATTELEYA* × *MATUTINA*. (SEE P. 232.)

fixed, for one exhibits a distinct attempt at a trilobate form, and is different from the others. The sepals and petals are yellow, tinged with vermilion; the lip, yellow at the base, reddish in front. Like other crosses with *Epidendrum radicans*, it will doubtless improve when thoroughly established, and like them be easy to grow and propagate.

but no wholly satisfactory or helpful diagnosis or remedy has been forthcoming. The reason seems to be—and I have been led to the conclusion after many years of careful observation in my own garden and elsewhere, and after much correspondence and reading of all that has been advanced by others on the subject—that basal rot is no truly specific disease

trace of mites, I entertain no doubt whatever that their presence is a consequence, not a cause of the malady.

In brief, any adverse condition, whether excess of food or unsuitable food, the shock of severe cold and the irritation of alternate frost and thaw, prolonged drought, absence of ripening sun in summer, the perpetual multiplication by bulb-division instead of by seed, may make the Narcissus ill at ease, and the symptoms of this discomfort appear in a paralysis and decay of its most vital part, the basal plate or disc whence its roots issue.

Twice I have noticed the appearance upon leaf, stem, and flower of my Narcissi of a brown blotch, which had quite the appearance of a fungoid affection, and evidently spread from leaf to leaf and from plant to plant. My flag-Irises were visited by the same thing at the same time; indeed, it appeared to attack them first, and thence to spread to the Narcissi. Experts to whom leaves were submitted failed to identify it with any known fungus, or to establish its fungoid character; but from its infectious character, and from its disappearance after a persistent spraying with ammoniated copper-carbonate, I have little doubt that it was of this nature.

The Narcissus-fly (*Merodon equestris*) is not a disease, but may be briefly mentioned as a plague, which would prove troublesome if it were to obtain a lodgment. Fortunately, our climate does not seem to attract it as a permanent resident. It sometimes comes, of course, in the larva form, in considerable quantity, from Holland, and it is well to handle all Dutch bulbs of Narcissi, and cut open any that are soft and compressible, to discover and destroy the white grub. The insect has been figured in all states in the horticultural journals; and its life-history is fully described in a *Monograph*, by Dr. J. Ritzema Bos, G. H. Engleheart.

THE WEEK'S WORK.

THE HARDY FRUIT GARDEN.

By H. W. WARD, Rayleigh, Essex.

Taking Down Blinds from Fruit Trees.—Advantage may be taken of a fine day to take down the cloths which have been used during the last seven or eight weeks to protect the blossoms upon Apricot-trees from frost. Roll them up together with the sash-line and loops, and after they have been tied and labelled, put them away in a dry place for future use. The upright poles and coping-boards should also be stored away. The cross-beams in a barrow or cart-shed make a suitable place, and they should be stored so that they may be taken down next year without having to remove the poles and boards belonging to the Peach and Plum walls. Should there be any difference in the heights of the several walls on which the protecting material has been used, a label indicating the wall to which the respective poles belong should be attached to each. The blinds must be retained on Peach walls a week or two longer, so that they may be used should occasion require them, remembering that what is not prevented in such cases cannot be cured. Trees that require blinds the longest are the Green Gage Plums and choice Pears.

Extension-trained Trees.—In the case of young wall trees which have had the unpruned growths of last year bent down towards the ground, and secured to the wall in that position, in order to cause all the wood-buds on the individual shoots to push into growth, as advised in a previous Calendar, it will be necessary to draw the nails and spread out the branches evenly over the space allotted to each tree, distributing all the young shoots over the intervening spaces, and securing them in position with nails and shreds, or raffia where the walls are wired. Pinch out or rub off surplus buds at the same time. Should any of these young growths be extra strong, pinch out the points, so as to promote a balance of growth.

Watering Wall-trees at the Roots.—Apricot and Peach-trees, and, indeed, all trees on walls having south, west, and east aspects, should receive another good watering at the roots, the soil being first pointed over with a digging-fork. It is much better to give a few thorough applications of water at the roots than to give a dozen surface waters. If directions as to applying a mulch of short dung over the roots of the trees have not yet been carried out, no time should be lost before doing so.

THE KITCHEN GARDEN.

By W. POPE, Gardener, Highclere Castle, Newbury.

Asparagus from Seed and Transplanted.—Where Asparagus has to be forced in quantity yearly in the usual manner in heated pits and hot-bed frames, some plants should be raised from seed each year. The present is the best time to sow. The seed should be scattered very thinly in shallow drills drawn 1 foot apart; the plants so raised will not require to be transplanted or thinned, and with liberal treatment will afford some useful heads the third year. If the plants are to be grown in old-fashioned beds, the seeds should be dropped in patches of two or three together, allowing 1 foot between the patches, three rows of patches going to a bed. For ordinary permanent plantations the seed may be sown on the flat in rows from 2 to 3 ft. apart, the vacant land between being utilised for a year or two for growing salad, Spinach, dwarf Cauliflower, &c. It is important that the soil for Asparagus be deep, rich, and well-drained. The month of April affords the best time for planting new beds and filling vacancies in old beds and loes. If a showery day be chosen for the job, all the better; and the plants should be from 1 to 3 years old, though older roots may be safely lifted and replanted. Be careful to lift the roots straight from the centre and to place the crowns 3 inches deep in the soil. If the weather should be hot and drying soon after planting, a slight mulching of light manure or decayed leaves may be placed over the roots. Established beds of Asparagus will be benefited by a liberal application at this season of liquid-manure; or of guano, salt, and soot, or sulphate of ammonia at the rate of 2 ounces to the square yard. These manures may be applied during showery weather, and repeated once or twice during the next two months.

Broad Beans.—When the plants have reached a height of about 4 inches, mould up the rows as a means of steadying the plants against wind. Seed may be sown of Green Windsor and Beck's Green Gem varieties, for furnishing pods in the mouths of July and August. A soil that is moderately rich is found to be the best for Broad Beans.

Spinach.—A sowing should be made forthwith, and repeated at three weekly intervals, so as to ensure a full supply during the season. When the seedlings are large enough to handle do not wait, but thin them to a distance of 5 inches apart. Some defer thinning till the leaves are large enough for use, and then draw out surplus plants as Spinach is wanted; but this is mistaken economy, the leaves never attaining to their full size, and the plants are sure to run prematurely to seed.

Capsicums and Egg-Plants.—Seed may now be sown in gentle heat, the seedlings being pricked off singly into small pots when large enough, and grown on in a temperature of 65°, and repot when necessary. (Of the seed may be sown in thumb-pots or 60's, and not transplanted, and so time be saved. Etc.) If suitably hardened off late in May, both species may be planted at the foot of south or west walls in the following month; when given a favourable season, they will ripen their fruit perfectly. Except, however, on very warm sites, the plants are more satisfactorily grown in pots under glass, being then useful for decorative purposes, more particularly the Capsicums.

Vegetable Marrows and Ridge Cucumbers.—Seed of both may now be sown in warmth, grow on gently near the light in a temperature of 60° to 65°, and hardened off carefully previously to planting them outside about the middle or end of the month of May, with some sort of protection against night cold.

THE FLOWER GARDEN.

By CHARLES HERRIN, Gardener, Droppore, Maldenhead.

Violas.—The supply of these flowers from out of doors will soon be past, and as soon after as possible the plants should be divided and replanted. In the case of most varieties there will be an abundance of runners or young plants already formed for making up the new beds. These beds should be prepared upon a fresh piece of ground, which, when being dug, may be given a liberal supply of thoroughly decomposed manure. If this has been prepared some time previously, so much the better. Put the plants about a foot apart each way, and if the weather be dry, an occasional watering may be required. A mulch of leaf-soil or old mushroom-bed manure is of much assistance. Spare spots at the foot of walls or other sheltered places, having early or late aspects, should also be utilised, in order to forward and prolong the supply as much as possible. Some fine single varieties have been introduced

during the past year or two, including Princess of Wales, a striking variety, with large bright blue flowers, borne on stalks 6 to 8 inches in length. California and Admiral Avellan are others with long stalks and large flowers. Wellisiana, sown out some years since by Mr. C. Turner, is also still one of the best, and is rather later in flowering than others.

Lily of the Valley.—The crowns, being just starting into growth, are in a suitable condition for moving. This is necessary if the roots have become matted together, and the growths appear weakly. Sort the crowns over after lifting, and plant the smaller ones by themselves. The new bed should be made upon ground that has been well trenched and manured. Plant the crowns in slanting drills, chopped out with a spade, 3 or 4 inches apart, allowing the same distance to the row. West and north borders are the most suitable ones for Lily of the Valley culture, those on the north aspect affording spikes ten days or more later than those in warmer situations.

Golden Pyrethrum.—Where seedlings of this plant are necessary for edgings or other uses, seeds may be sown thinly in hand-lights, or even on a south border in the open, covering them very slightly with fine soil. The seedlings may be transplanted to the flower-beds early in June.

Tagetes signata pumila is a useful yellow-flowering annual, and forms a fairly good substitute for the *Calcocolaria* upon soils of a light, sandy nature. Seeds sown forthwith in boxes, or on a mild hot-bed in frames, will be quite early enough to make strong plants by bedding-out time. The seedlings should be pricked off into other boxes or frames, a few inches asunder, as soon as large enough to handle.

General Work.—The pruning of shrubs, roses, &c., should be completed as soon as possible. Afford to Rose-beds a good mulch of rotten manure, and if its appearance on the surface is thought unsightly, cover with a small portion of soil. In light soils, where the Rose-borders have been ferked over, to cover manure or small weeds, it will be advisable to trample the soil quite firm round the plants before the mulching of manure is applied. *Jasminum nudiflorum* having passed out of bloom, should receive the necessary pruning and thinning before new growth commences.

PLANTS UNDER GLASS.

By G. H. MAVOOCK, Gardener, Luton Ho Park, Luton.

Violas.—The time has arrived when the plants may be divided for increase, whether for frame or other culture. A method which is very suitable is to select three of the strongest runners from a plant and place them in a cutting-box, or in rows in a pit or cold frame within 2 inches of the glass, and keep them regularly syringed till rooted, which will be in about a fortnight. On the appearance of roots, air must be admitted to the frame, gradually increasing the amount, till by the end of April the plants will be in a fit state to be planted out in their summer quarters. Other growers choose young side-growth with roots, and plant these out without further preparation. The aspect selected for the summer, supposing the plants are to be grown in frames for the production of winter flowers, is one that is half shady, and where the soil is in good heart, or can be made so with a heavy dressing of leaf-soil or thoroughly rotted dung. If the soil is not naturally tenacious, it should be dressed with heavy loam in addition to the manure, which will enable each to be lifted in the autumn with a compact ball of roots and mould, that need not be reduced in size before planting. If space be no object, plant the rooted runner or rooted offshoots 18 inches apart each way, although 1 foot by 1½ foot will suffice; so much being necessary to allow a hoe to pass in between them. As the season advances, the Violas will grow fast if the soil be kept moist, and they are dewed over after warm days; and a weekly examination should be made for runners, which should be nipped off when quite young. By keeping the soil moist, and the leaves wetted with the garden engine, red-spider, which is very inimical to the Violet, will be wholly prevented from infesting the foliage, or its ravages would be greatly checked. Marie Louise is still one of the best varieties. Neapolitan and New York form a succession to this one. A good single white is Rawson's, the flower having plenty of much substance. The Czar and California are single-flowered varieties; Conte de Brazza is a double one, and white.

Work in the Plant-houses.—Coleus may be increased by placing cuttings to the required number singly in thumb-pots, and if large plants are required, these should

be repotted as soon as they are well rooted. A few young plants should always be kept in 3-inch flower-pots for dinner-table decoration, &c. Roses growing in pots, and others potted out, must not be allowed to get over-run with aphides, or remain infested with the Rose-maggot, nor the beds lack water. If mildew should attack the leaves and shoots, apply dust daily with it. Zonal and Ivy-leaved Pelargoniums for flowering in the autumn should be potted forthwith, and placed on inverted pots in an intermediate-house or pit. Lachenalia which are gone out of flower should be afforded less water, but enough to prevent premature decay of the leaves; only after the leaves are decayed should water be withheld altogether, and the pots stored in a cool-house.

Hydrangea hortensis.—Any plants which have been standing in cold frames since the autumn, if wanted to flower early, should be placed in the greenhouse, previously washing the pots, and affording a light dressing of artificial manure to such of them as were not repotted last year. Large specimens should be staked and tied snug, unshapely branches being removed. The shoots on such branches make good cuttings, which, by inserting them singly in 60° will strike in gentle bottom-heat under bell-glasses. A few cuttings should be struck annually, so as to keep up a stock of plants, and allow of aged plants being thrown away.

Chrysanthemums.—If green-ly be present on these plants, dust the infested shoots lightly with tobacco-powder, doing this late in the evening, and syringing it off early next morning. Do not let the plants get pot-bound, but shift into 6-inch pots as soon as the water can run all through the soil, using well-drained, clean pots, and keeping the plants close for a few days; then gradually affording air in larger quantities, and in a few weeks remove the lights during the day, and the present protection from frosts but do not coddle the plants. The soil to be used in the final re-potting should be mixed, and placed in a heap in an open shed in readiness for use.

THE ORCHID HOUSE.

By W. H. WARR, Orchard Grower, Burford, Dorset.

Catasean, Cynoches, and Mormodes, are very curious and interesting plants. Unfortunately, the majority of cultivators have found it very difficult to keep them in a thriving condition. They grow and bloom satisfactorily for possibly some years, and then in the absence of any apparent reason, they gradually deteriorate. This is mainly attributable to insufficiency of bright sunshine during the autumn to thoroughly mature a new, healthy bulb. Without sunshine during that period it is impracticable to afford them the amount of water necessary to enable them to keep plump during their long period of rest. The majority of these plants are now commencing to grow, and immediately the young growths are seen pushing from the base of the pseudo-bulbs, turn the plants out of the old compost, and cutting away all dead roots and decayed parts. Eradicate every vestige of scale or mealy-bug before the plants are repotted, or they may give trouble throughout the growing season, and that basket-culture is preferable to that in pots or pans, as their aerial roots delight in pushing their way out around the basket into the moist atmosphere. Select shallow Teak-wood baskets with copper-wire handles about 12 inches in length, so as to bring the plants well up to the roof-glass. Place a few flat pieces of crock over the bottom of the baskets, and use a compost of fibrous-peat and sphagnum-moss in equal parts, with a moderate quantity of small crocks intermixed with it, and press the material around the plants with moderate firmness. *Cattatum parvum*, *C. Christyanum*, *C. Russellianum*, *C. bartlettii*, *C. b. spinosum*, *C. tabulare*, *C. longifolium*, *C. scurra*, *C. speciatum*, *C. tridentatum*, *C. Bugnerothii*, and its several distinct varieties should be suspended to the roof on the east side of the East India or Dendrobium-house; also, *Cynoches chlorochilum*, *C. peruvianum*, *C. pentadactylum*, *C. Esertonianum*, and *C. vesiciferum*. The varieties of *Mormodes*, as *M. Rolfei*, *M. parlium*, *M. p. unicolor*, *M. luxatum*, *M. l. churruum*, *M. buccinatorum* should be placed in the warmest and lightest part of the Cattleya house. For the next few weeks, after re-basking the plants, water must be afforded sparingly; very little indeed is necessary until the growths are well advanced, and the roots have obtained a firm hold of the new compost. When the plants are re-established, and growing strongly, they will need an abundance. One of the main conditions of success is to grow these

deciduous plants on as quickly as possible, so that they will finish up early in the season, and therefore have the full benefit of the late summer and early autumn sunshine to consolidate and ripen the pseudo-bulbs.

Habenarias.—Now that the cultivation of *Habenaria militaris*, *H. carnea*, and its pure white variety, *nivosa*, has become more generally understood, no amateur who has the necessary degree of warmth, need hesitate to cultivate these beautiful Orchids. They are pretty decorative plants, and the flowers are useful for cutting purposes. The new growths which are now appearing start away in a similar manner to those of the *Galium*. Immediately the shoots are seen pushing up through the soil, the tubers should be turned out of their pots, carefully separated, and re-potted singly into pots as small as possible, giving perfect drainage. Place the tuber in the centre of the pot, keeping the crown just below the rim, then fill the space around the tuber with clean crocks to within an inch of the top, so that when repotted a part of the tuber will be in the crocks, and the other part in the compost. Over the drainage place a thin layer of sphagnum-moss, and fill up with the following compost, just covering the top of the tuber:—One-half fibrous peat and loam, and one-half chopped moss, a moderate quantity of finely-broken crocks, and coarse silver-sand, mixing the whole together, and potting moderately firm. It is not necessary to shift the plants into pots of larger dimensions after the first potting. When the plants have been potted, place them on the shady side of the warm-stove or East India-house, as near to the roof-glass as possible. Water must be given sparingly at first, merely sprinkling the surface of the soil occasionally with a fine-rose watering-can. As soon as active growth commences and the plants are rooting freely, gradually supply them with an increased quantity, and when in vigorous growth, they may be given an almost unlimited quantity. During bright sunshine some shade must be afforded them, and it will be very beneficial to them to well syringe the undersides of the foliage occasionally, which not only encourages strong healthy growth, but prevents insect pests disfiguring the delicate foliage. *Habenaria Susanna* may also be repotted now, and placed in a shady part of the heated house; it will yield similar cultural treatment. Plants of *H. rhodochila* that were repotted early in the year should now be closely watched for small yellow-thrips and red-spider.

FRUITS UNDER GLASS.

By F. HARRIS, Gardener, Eastnor Castle, Leicestershire.

Peaches and Nectarines.—The fruits on trees in the early-house, which were started in December, having passed the stoning period may be pushed on a little faster; the temperature at night being raised to 60°, and the house closed early, taking care however that the temperature does not afterwards exceed 85°. The syringe may be used freely twice a day, which is the best preventative of red spider, occasionally damping down with manure-water, and putting some of it in the evaporating-pans. Afford good applications of tepid-water at the root; and if the trees are carrying heavy crops of fruit, manure-water will be required in addition. Keep the shoots for next year's bearing tied in; avoid overcrowding; stop lateral and foreign shoots at the first joint, and keep the fruits clear of the leaves by putting the latter aside, not by pulling them off. In the case of Nectarines, if the fruits are inclined to rust, morning syringing should be discontinued, this being a chief cause of this disfiguring appearance. If the trees are well syringed at closing time, and the paths, &c., are damped occasionally during the day, the trees can be kept in a healthy condition.

Succession Peach-houses.—These, according to the time the trees have been started, will require the same sort of attention as that afforded the trees in the early house in the matters of disbudding and stopping shoots, thinning the fruits, &c. See previous Calendar for directions as to the manner of carrying out these operations.

Late Houses.—The trees will now be in flower, and should the weather be dull and wet, a small amount of fire-heat may be required, and the camel-hair pannel be used to induce perfect fertilisation. If the weather is sunny, neither will be necessary. Houses having no heating apparatus should be shut up early in the afternoon, in order to husband solar-heat. We are obliged to burn oil-stoves in some of our cold-houses, to prevent the flowers being frozen, as we have had as much as 14° of frost quite recently.

THE APIARY.

By EXPERT.

Artificial Pollen.—If the weather becomes warm, pollen should be freely gathered now, and falling a natural supply, Pea-flour may be given in its stead. For inducing bees to take Pea-flour, nothing excels a cold skep from which combs have been cut out. After being warmed at the fire its odour will attract the bees to it very soon, and they will take the flour, scattered on shavings, at a great rate.

Feeding.—Good stocks will be increasing fast in population, and brood-rearing making rapid progress, so that the natural pollen can be gathered, the stimulus already acquired will be continued without any care on the part of the bee-keeper. Honey from natural sources will, however, be scarcely obtainable in sufficient quantity for the needs of stocks for weeks to come, and attention must, therefore, be given, even by those who wish to do as little as possible, so that the prosperous condition of breeding-stocks may be continued without a check until the honey harvest opens. Artificial supplies by means of the feeder should also be given in all cases where want is threatened.

Packing Bees for a Long Journey.—The packing of bees for transit is now-a-days more of a necessity than it was years ago, and bee-culture has become general, and the demand for stocks as well as swarms has in consequence vastly increased. Years ago, when I commenced bee-keeping, I had a good apprenticeship at packing stocks and swarms, and many were the losses at first resulting from my too careful method of packing. Now, the moving of stocks from one apiary to another, near together or far apart, can be carried on without danger, seeing that most stocks are upon combs built upon foundation that has been wired into the frames. Before anyone buys stocks at the present time, I strongly advise the employment of an expert to make a careful examination of them, to see that they are healthy, for with the prevalence of foul broods this is more than ever necessary. By no means have stocks from or near an infected area. I very much regret to see advertisements of stocks by men whose apiaries have been badly affected with disease; and a neighbour tells me he saw a lot rotten with disease in one advertiser's apiary this season. If the stocks, declared to be healthy, are taken from his own or any other apiary in the village, they will be a source of danger to any neighbourhood to which they may be sent. Presuming, however, that the stocks to be removed are healthy, they should be packed in the manner here indicated.

Packing Stocks on Movable Combs.—If the stock is to remain in the hive, nothing need be done to the comb chamber if on the tiering-plan, and it is full of combs; but if it is a long hive, and the frames do not fill the chamber, the dummy should be nailed close up to the last frame, and the empty space filled with chaff or other material. In either case the bees must be confined to their combs by a piece of perforated zinc being nailed over the entrance, and a sheet of it over the tops of the frames. A lath should also be nailed across the frames to keep them from moving. The lift and the roof may then be replaced; and, to make all secure, a French nail should be driven through the plinth, to fasten the brood-chamber to the floor-board and the upper parts of the hive to those below them. Finally, a stout cord must be bound round to facilitate lifting and carrying; and, as a last precaution against rough or careless handling, a couple of chaff-rolls, like the well known sand-bags, should be tied under the front and back of the hive. A simple and satisfactory method of moving stocks is to place the frames—say, nine—with adhering bees in a box. The boxes into which the ends of the top bars rest are either cut out of the wood or a piece of iron, to be placed across the top. The holes must be seven-eighths of an inch full, and five-eighths of an inch apart, the latter distance being given because the combs are not all of equal width in every hive as a result of bad spacing, and a little extra room in travelling is an advantage. There should be a space of five-eighths of an inch at least below the frames, and inside the box a piece of wood, half-an-inch, should be nailed across the ends about half-way down. Through this piece of wood driven French nails are put, at points to correspond to the points of the opening for the ends of the top bars above. If they are a trifle wider, there will be a little play for the combs, which are better not kept quite rigid. For ventilation, holes about 9 inches square are made both in the lid and bottom of the box, which, as well as the entrance, are covered with perforated zinc.

EDITORIAL NOTICES.

ADVERTISEMENTS should be sent to the PUBLISHER.

Local News.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

Newspapers.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, APRIL 13 (Royal Horticultural Society's Committee (National Auricula and Primula Society), at Drill Hall.

THURSDAY, APRIL 16—Linnæan Society.

SALES.

Special Sale of Begonias, Carnations, Dahlias, and Thousands of Hardy Plants from Ware's celebrated Collection, at Protheroe & Morris Rooms.

MONDAY, APRIL 12 Great Clearance Sale of Business Orchids, by order of Mr. J. W. Moore; Orchids in Flower, Stove and Greenhouse Plants, Liliaceæ, &c., at Stevens' Rooms.

Lilies, Palm Seeds, Greenhouse Plants, Begonias, Carnations, &c., at Protheroe & Morris' Rooms.

WEDNESDAY, APRIL 14 English and Foreign Palms, 1000 Roses to name, Ornamental Shrubs, Border Plants, &c., at Stevens' Rooms.

AVERAGE TEMPERATURE for the ensuing week, deduced from Observations of Forty-three years, at Chiswick.—48°.

ACTUAL TEMPERATURES—London.—April 7: Max., 59°; Min., 39°. Provinces.—April 7 (6 P.M.): Max., 49°, Valencia; Min., 40°, Aberdeen.

A SHORT time since, in the village of Arbor-Day, Kent, was inaugurated what may eventually grow into a pleasant and a profitable custom—one borrowed from the United States, but none the worse on that account. On a particular day the school children participate in the planting of fruit or other trees in commemoration of their country's inauguration. Here it is proposed to do likewise, to fix upon a day, in autumn preferably, and then with due ceremony and rejoicing to plant fruit-trees. Patriotism is to be aroused, the national flag is to be unfurled, the safety of the QUEEN besought, and blessings to be invoked on the Prince of WALES! This is all very idyllic. If it grow spontaneously it will surely succeed, but if it is to be done to order, it will assuredly fail; but again, if it be conducted as a matter of business, it has a very fair chance of success.

In any case it must have a beginning, and what the sequel may be must depend on the plans and on the practice of the promoters, as well as on circumstances. The promoters must start with a clear notion of what they intend to do. There are many courses before them. If they mean to get up a village festival, instil a little patriotism, convey a few useful lessons on planting and the management of trees, they will, no doubt, effect some indirect good; but the benefit as regards the extension of fruit culture, looked at as a business, will be trifling. If they mean, after due trenching and preparation of the soil, to set aside each year some acres for a fruit plantation, with dwarfing stocks and intervening Gooseberry bushes, Black Currants, Raspberry quarters, and perhaps Narcissus, Violets, and Wallflowers in between, well and good; the result will, no doubt, be excellent—if the landlord and the tenant have an agreement satisfactory to both parties, and a good market be within convenient access. But the village-festival part of the business will, we fear, in such case be a little out of place.

Supposing such a ceremonial to be desirable, would it not be well to associate it rather with the gathering in of the harvest, especially if planting is to be done? The Kentish peasantry, and a whole army of denizens of the London slums, find their way in late autumn to the Hop-gardens to pick the fragrant catkins. If the weather be propitious the results are excellent; but if otherwise, the hospitals and dispensaries are for many weeks after overfilled with patients suffering from rheumatism or chest complaints.

The gathering in of the fruit crop is not, as a rule, beyond the powers of the villagers and their children; and here is one point we suggest to those who desire to foster an "arbor-day"—the men might on picking days be instructed in less primitive methods of gathering the fruit than by knocking them down with a broom-handle, or throwing them at random into a basket; and the girls and the boys might easily be taught to handle the fruit carefully, to pick out the bruised and worm-eaten fruit for the benefit of the pigs and fowls, and carefully to select, and with equal care to pack, the finest specimens. Our farmers might well imitate the care with which the Spanish or Canary Island peasants wrap each orange in paper, or in a maize-leaf. Opposite our windows as we write are boxes of Tomatoes and Potatoes from the Canaries packed with a degree of care and neatness we do not often see in the home productions.

Quantities of English Apples, as we have also the opportunities of seeing, come into the market in such a condition as to be practically unsaleable. It is sheer folly to waste time, labour, and money on sending such samples to market. They fetch nothing. Good, even parcels of fruit of uniform quality, well packed, and sent to market at the right time, may fluctuate in price from various circumstances, but on the average of years they are sure to be profitable.

The idea of teaching boys and girls not to throw Apples about as if they were stones, and of setting them to sort the Apples and pack them, will, of course, raise the objection that the said boys and girls, being boys and girls, will take toll. No doubt they will, but not to any serious extent, and the presentation of a few Apples and a little kindly supervision and tact will reduce loss from this cause to very small proportions.

Another suggestion occurs to us with respect to "Arbor-day," and that is, to plant the sides of the country roads and other waste places with fruit trees. This is successfully done in some parts of Germany, and the practice is gradually spreading. The little kingdom of Wurtemberg derives an annual amount of 1,500,000 francs a year from its fruit-lined roads. In Alsace-Lorraine, as M. BALLET tells us, the trees were planted by the Germans some twenty years ago, and each tree now yields on the average a revenue of 15 to 25 francs, or 150,000 francs a year. In France, too, a few Poplars are often planted by the peasant proprietors at the birth of Marie or Annette, and these Poplars form a valuable dot when Marie or Annette think it desirable to establish a home of their own. As to road-side fruit-trees, the plantation would have to be done with great care, and some people will no doubt think that their plantation would constitute a direct encouragement to a breach of the eighth commandment; but it would be easy to plant sorts which, however valuable for the manufacture of cider or of preserves, would not be so

palatable as to ensure a second marauding expedition. The loss from depredations of this kind in districts remote from towns and railway-stations would be practically infinitesimal, and it is to be hoped that there are not many who would rail at the occasional abstraction of an Apple by a dust-bestrown traveller. Moreover, the robbery of private plantations would be proportionately lessened.

Even if they were of little use for their fruit, the plantation of such trees would be valuable as affording shade and shelter to pedestrians and cyclists, they would serve as wind-breaks and landmarks, and they would add to the beauties of the country, now often ruthlessly destroyed.

The waste in the case of unoccupied walls is also something prodigious. It is the exception rather than the rule to see the farm-house and its adjoining buildings, or the labourers' cottages, covered, as they might be, with Apricots, Pears, the finer sorts of Apples, and on the north side Morello Cherries. If "Arbor-day" can be turned to account in stopping this culpable waste of means and opportunities, we shall have cause to thank the foresight of those who initiated so beneficent a custom.

As we have said, it is desirable to have a clear idea of what we want to do before commencing operations; and the Eynsford folk here, it appears, the intention of extending cider-making in Kent. We remember when cider was made—perhaps it still is in Kent—along the Sussex border, but our recollections of the beverage are not pleasant ones! The manufacture of cider is a delicate and difficult process; it cannot be learnt by novices in a season, and hence the question arises whether it would not be well to grow the Apples in Kent, and send them to Herefordshire, Devonshire, Somersetshire, or Norfolk, where the cider manufacture is better understood than it is in Kent. But that is a detail that the experimenters must work out for themselves. The drying of Apples—illustrations of which were shown at Chiswick a few years ago, and which formed the subject of an address by Mr. BADGER before the Society of Arts—is also a matter to be thought of by the Arbor-day planters. A man who plants a tree properly—we do not say one who "sticks in" a tree—is a public benefactor. If he can combine his beneficence with a village festival and so lighten the dulness of village life, while, at the same time evoking a spirit of patriotism, he will be a threefold benefactor.

SPRING-FLOWERING PLANTS AT CROYDON.

The greenhouse containing the plants illustrated by fig. 78 is in the gardens of F. LLOYD, Esq., Coombe House, and at the time our photograph was taken it offered a very gay aspect. The well-flowered Cyclamen plants were in 5-inch pots, and there are sixteen plants represented in the picture. There is a batch of excellent Chinese Primroses on the left-hand side of the figure, but they cannot be seen distinctly. The Cinerarias are very good, and are suitably arranged with Azaleas, Deutzias, Begonias, and a few ornamental foliage plants. A good specimen of Dendrobium Pierardi may be discovered in a suspended basket at the extremity of the house. Several plants of D. crassinode, and a Phalenopsis, are also suspended in baskets. Had there been a freer use made of basket plants, including Lachenalias, of which we notice there are included several good examples, it would have had the effect of improving the appearance of the roof of the house. Mr. M. E. MILLS is the gardener at Coombe House, and to him are we indebted for the photograph.

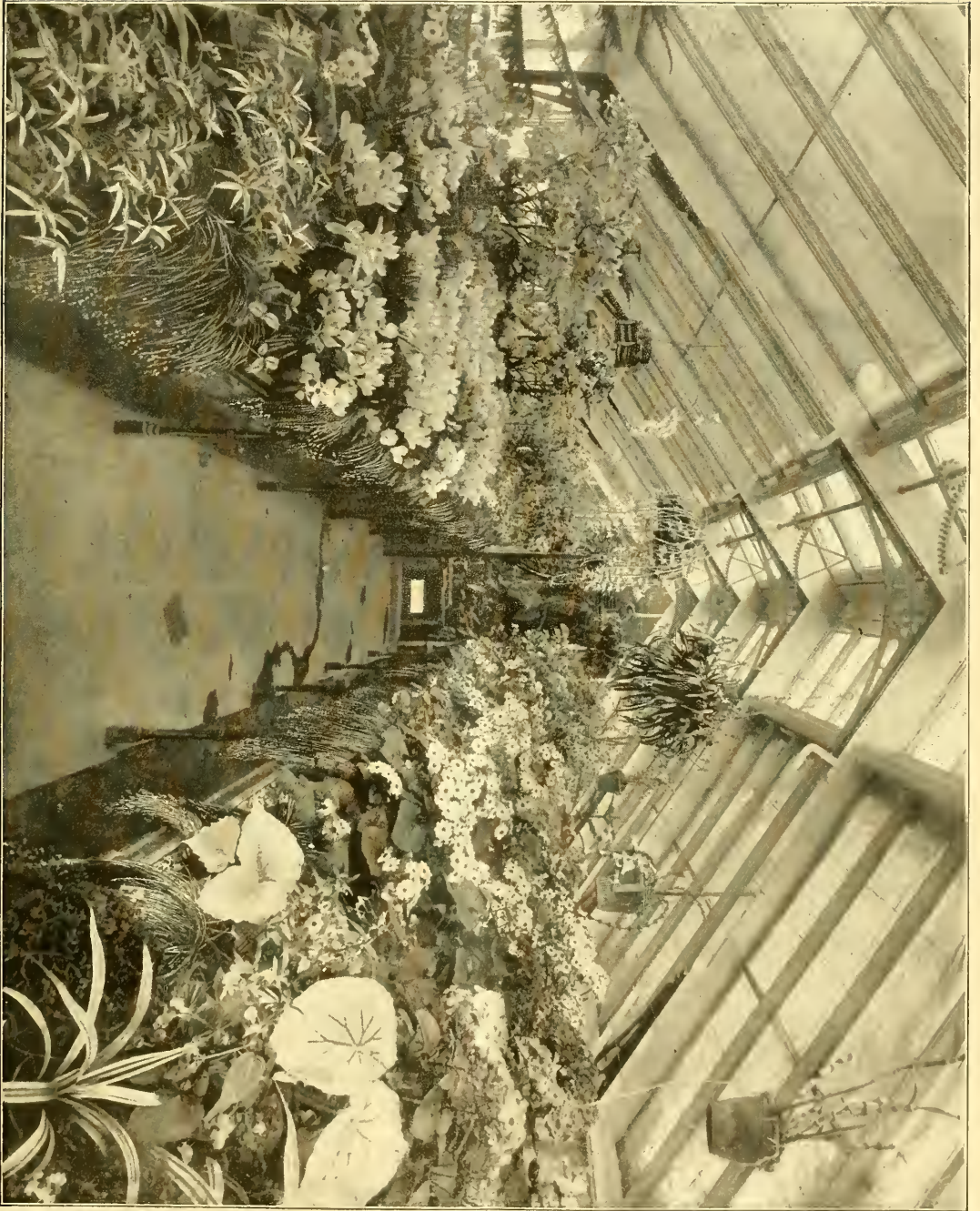


FIG. 78.—SPRING-FLOWERING PLANTS AT COME HOUSE GARDENS, GROVING, SURREY. (SEE P. 236.)

ROYAL HORTICULTURAL SOCIETY.—The next meeting of the fruit and floral committees will be held on Tuesday, April 13, in the Drill Hall, James Street, Westminster, in connection with which the National Auricula and Primula Society will hold their annual show from 1 to 5 P.M. At 3 o'clock a lecture on "Artificial Manures" will be given by Mr. J. J. WILLS.

LINNEAN SOCIETY.—On the occasion of the evening meeting, to be held on Thursday, April 15, 1897, at 8 P.M., papers will be read—1, "On some New Irish Cruciferae," by Mr. A. C. WALKER, F.L.S.; 2, "On *Dasmodium* from Singapore," by Messrs. W. and G. S. WEST. There will be exhibited a number of plants collected during two years' residence in Franz Josef Land, by Mr. H. FISHER.

HORTICULTURAL CLUB.—The usual monthly dinner and *conversations* will take place on Tuesday, April 13, at 6 P.M. A paper will be read on the "Flower Gardens of Victoria," by Dr. ERNEST D'OMBRAIN, of Melbourne.

CRYSTAL PALACE FRUIT SHOW.—The prize schedule for this show will be issued in a week or ten days' time by the Royal Horticultural Society, and will contain an authoritative list of dessert and cooking Apples, and Pears and Plums. Post free, one penny. Donations towards the prize fund will be gratefully received by the Society.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.—Mr. ARTHUR W. SUTTON, of Messrs. SUTTON & SONS, Reading, has contributed the sum of £100 to the "Victorian Era Fund," which is being raised by this Institution to commemorate the Diamond Jubilee.

TORQUAY DISTRICT GARDENERS' ASSOCIATION.—We learn from the fifth annual report and balance-sheet for 1896-7 that this Society has made steady progress, the number of members has slightly increased, excepting honorary members, who are rather fewer than in previous years. The financial condition of the Society is good, a small balance being in the hands of the Treasurer. The fifth annual summer outing will take place as usual towards the end of July.

ISLE OF WIGHT.—The monthly meeting of the Isle of Wight Horticultural Improvement Association was held on Saturday, April 3, at Newport. In the afternoon and evening there was an exhibition of Daffodils, Tulips, and other spring flowers staged by Messrs. P. BARR & SONS, London; T. WARE & SONS, Tottenham; E. CAVE & SONS, Newport, I.W.

CINERARIA BLOOMS are sent us by Messrs. CARTER & Co., High Holborn. These flowers represent a valuable strain; they are of large size, and possess varied, distinct, and bright-colouring. A large quantity of plants in bloom may now be seen at Messrs. CARTERS' nursery at Forest Hill, S.E.

THE ROYAL HORTICULTURAL SOCIETY OF IRELAND held a spring show on the 1st inst. in the Royal University Buildings. The display was of moderate extent, and consisted principally of Narcissus.

THE ROYAL SCHOOL OF HORTICULTURE AT POTSDAM.—The Royal Horticultural School at Potsdam, opened in 1824 by request of LENNE, the Director of the Royal Gardens, is one of the oldest and most celebrated institutes for the education of the gardener, and is able to look back on an existence of almost seventy-five years. It is the intention of the former pupils, friends of the Institution, and members of the craft to have a jubilee in 1899 in celebration of the opening of the institute; and numerous professors, head gardeners, nurserymen, landscape gardeners, and others, in response to a circular sent out by Herr WALTER, Royal Court Garden Director, and Herr T. ECHTERMEYER, the Inspector of the Royal Horticultural School, Potsdam, have signified their willingness to form an executive committee for the intended jubilee, and it may be taken for granted that nothing will be lacking to make it in every respect

a success. Already large sums of money have come out to hand for the "Travelling Fund." This fund is intended to afford assistance to needy craftsmen who are certified to be deserving persons, but who lack the means to take journeys for intellectual improvement; as likewise for furnishing funds for the festivities. The Executive Committee, and that of the Great General Horticultural Exhibition, meet on Thursday, April 29, at the Hotel Imperial, Unter den Linden, Berlin, in reference to the celebration of the seventy-fifth year's jubilee of the *Vereins zur Beförderung des Gartenbaues in den Preussischen Staaten*; and finally to settle the order of the festivities, and what further steps it will be necessary to take.

TRENTHAM AND HANFORD HORTICULTURAL SOCIETY.—The ninth annual exhibition of this Society has been arranged to be held on July 22 next in the Trentham Gardens, by permission of His Grace the Duke of SUTHERLAND, who is also President. In the schedule just to hand there are upwards of 100 competitions, composed of "Open to all" classes, others for gardeners, single-handed gardeners, local exhibitors, and cottagers. There will probably be considerable competition in the open class for a group of plants, and in the fruit classes. One of the principal of the last-named section is a class for a "decorated table of ripe fruit." We hope that nothing will prevent the show from being held this season, as was the case last year.

"FAVOURITE FLOWERS OF GARDEN AND GREENHOUSE."—This publication, to which we have previously had occasion to refer, is an excellent one for the amateur who desires to know something about the plants he cultivates. The text is clear and to the point; the illustrations, which are true to Nature, contain many details not ordinarily found in such publications, and err on the side of reduction rather than of exaggeration. Messrs. F. WARNE & Co., Bedford Street, Strand, are the publishers.

PLANES and WILLOWS.—"By the waters of Babylon," says the Psalmist, "we sat down and wept." Some of the riverside residents at Kingston and Hampton Wick seem disposed just now to do the same by the water of the Thames. They lament the gradual disappearance of the long line of common and very old pollarded Willows which ran along the side of the river by the margin of the Kingston town Canbury Gardens. The Willows are so old, and in such condition of decay, that if headed back they never break again; and many not headed have nearly all the long branches dead. There can be no doubt but that this gradual decay was hastened some years since when the promenade by the riverside was first made, owing to the foundation, some 18 to 20 inches in depth, consisting of town-ash or refuse, which partially buried the stems, and largely poisoned the roots. In some parts of the gardens where the swampy ground was raised by this material 2 or 3 feet, old Willows have been killed wholesale. Now nothing can save those on the riverside, and as Plane trees planted on one portion, where there were no Willows, several years since, have done remarkably well, the corporation are planting other Planes between the old Willows, and an outcry has in consequence been raised, the planting of other Willows being demanded. The reply is, that owing to the presence of the ashes in the foundation, the Willows will not thrive, but the Planes will. Birch, a charming tree in or out of leaf, has been suggested as a substitute. The old Willows are not of the graceful weeping order, and many of them are now most artistically ugly.

THE FORMAL STYLE OF GARDENING.—The *Builder* of March 27 contains a view of Versailles at the time when men wore cocked hats and periwigs. The gardens as shown are most elaborate, consisting of tall hedges enclosing temples, theatres, fountains, triumphal arches, and other specimens of the topiary art. The general effect is not so ridiculous as might be supposed, because it is in harmony as to form with the Palace, but a temple cut out of Yew or Laurel is a gross perversion and misapplication of material. If the hedges and clipped trees were all removed and

turf laid down, how vastly the Palace would be improved!

THE ROYAL COMMISSION appointed to visit the West Indies and to advise upon the steps desirable to be adopted in view of the decreasing profits from Sugar culture, has visited several of the islands, Trinidad, Jamaica, &c., and is likely to return to this country in May. Dr. MORRIS, whose experience in such matters is so extensive, forms part of the Commission. From the time of Sir WILLIAM HOOKER, who inaugurated the Colonial department, if we may be allowed to call it so, great attention has been paid at Kew to colonial requirements, and now the visit of the Assistant-Director cannot fail to be of service.

SUMMARY OF A METEOROLOGICAL JOURNAL.—The observations tabulated in this sheet were taken by Mr. LEESON PRINCE, at his Observatory, Crowborough Hill, Sussex, during 1896. As a brief epitome of the weather, as chronicled at this and neighbouring stations, we note that the spring months of the year were somewhat mild; drought being experienced (except during March) to an extent unprecedented for several years so early a season. The remaining months were, on the whole, wet, with the exception of some brilliant weather in July. Judging from records taken in other parts of England, the unusual drought and subsequent rainfall were very generally experienced.

FERN-HYBRIDS.—At a recent meeting of the Zoological-Botanical Society of Vienna, Dr. M. V. EICHENFELD showed hybrids between *Asplenium trichomanes* and *A. septentrionale* found in Tirol.

ROSE SHOW FIXTURES FOR 1897.—June 10 (Thursday), Ryde; 18 (Friday), Portsmouth (N.R.S.); 24 (Thursday), Colchester; 29 (Tuesday), Canterbury, Sutton, and Westminster (R.H.S.); July 7 (Wednesday), Hitchin and Tunbridge Wells; 8 (Thursday), Harrow and Woodbridge. The above, together with those given in the *Gardeners' Chronicle* on March 20, reports Mr. ED. MAWLEY, are the only dates definitely fixed that have as yet reached him. He will be glad to insert in the next list, which will be issued early in May, any further fixtures that may be sent to him at "Rosebank," Berkhamstead, Herts.

CURRENTS and PATRIOTISM.—Rather a strange conjunction this, one might be tempted to say, but that the one affects the other, to-day, must be admitted. In Greece the Currant crop is one of great importance, and the Greeks, fired with patriotism, are to a man in arms against the Turk and in favour of the Cretan. Admitting this, it naturally follows that the growers of Currants, and the men who prepare them for market, as well as those who see to their sale, have had to give up fruit culture and take to the field of war. "Pity 'tis, 'tis true:" the Currant crop has to be left to itself—to be matured, sold, and sent away to, amongst other places, the United Kingdom. This means, that, unless gentle peace quickly returns, the year's crop will be valueless, and the gallant little country a looser—a looser where it can least afford to lose—and English matrons will greatly miss the universal favourite, the juvenile consumers of puddings will by this remember the year of grace 1897. True, all Currants are not grown in Greece, nor do all puddings contain Currants, but Greek Currants, like Currant puddings, are universal favourites, and the loss will be felt by an extensive, if juvenile, army of consumers. The attention of buyers is being drawn to the possibilities of the Greco-Turkish embroglio by circulars emanating from the larger dealers in foreign and colonial fruits, fresh and dry, and it is well, we think, to make a note here of the state of things now existing in Greece as possibly affecting the supply here, and price, of our humble but excellent friend, the Greek Currant.

"THE WASTED ORCHARDS OF ENGLAND."—The information now collected into the form of a book of convenient size, will be remembered by some readers as having been first issued in the pages of the *Gardeners' Magazine*. Some hard truths are men-

tioned the ignorance, carelessness, and neglect, which allow plots of land and miles of walls, capable of much improvement, to be practically wasted; and we can only hope that these protests, and the general tendency towards technical education, will in their several ways induce a better state of things in the future. A better understanding between landlord and tenant, and more liberal railway rates, are, of course, primary essentials. The publishers of the pamphlet before us are W. H. & L. COLLINERIDGE, Aldersgate Street, E.C.

"COUNTRY LIFE."—We are pleased to see that this publication maintains, week by week, the degree of excellence which was shown in the first number of it. The illustrations are good and clear, those reproduced from photographs being particularly faithful. The letterpress also deals with just such subjects, and in just such a way as is most likely to find continued favour with all interested in a country life. The accounts of some of the country houses are most attractive. The publishers are Messrs. HUNSON & HEARNS, Tavistock Street, W.C.

DR. KLATT, of Hamburg, died on March 3. He was best known in this country for his work on the *Fridaceæ*.

THE D. THOMSON TESTIMONIAL.—We have received the following note from Mr. A. HENDERSON, of Thoresby Gardens:—"The subscription list for Mr. THOMSON'S testimonial will close on May 1, and it is hoped all who intend to join will send in their subscriptions by the above date."

FIFTY YEARS IN HER MAJESTY'S GARDEN.—CHARLES MARR, an employé in the Royal Gardens at Frogmore, completed his fiftieth year of service last week, and he was presented with an illuminated address of congratulation and a purse of gold, the subscribers towards which included members of the Royal Family. Owing to the sudden decease recently of Mrs. MARR, the presentation was made privately.

THE BULBS IN THE LONDON PARKS are now making a considerable display, and are worthy of a visit. Unfortunately, the weather has recently been very ungenial to them and to plants generally. In Hyde Park, as is usual, the principal display is made in the beds skirting Park Lane. Upon the whole, we think the Hyacinths are stronger and better than the Narcissus, with a few exceptions. A bed of N. Sir Watkin is very fine, with a carpet of *Scilla sibirica*. *Dielisya spectabilis* in beds carpeted with double white, and in another case double red Daisies, will look pretty soon. In some beds there are Hyacinths and Narcissus mixed, but in general the effect is not good, as the flowers of both species are in most instances about the same height. If the Narcissus had been stronger, and thrown their flowers an inch or two beyond those of the Hyacinths, a better effect would have resulted. Either species, with a suitable carpet, however, is preferable. Some of the combinations were N. Horsfieldi with H. General Havelock, N. maximus with H. Lord Derby, N. rugilobus with H. Sir H. Berkeley, N. Golden Spur with H. Czar Peter, N. rugilobus with H. Czar Peter, and a border of H. Van der Hoop. N. rugilobus with H. Mont Blanc (white) and H. Charles Dickens (blue). This bed had a very good effect. One of the best examples of such mixed beds in the Hyde Park is one composed of N. princeps, H. Priestley (pale blue), and H. Van der Hoop as a border. Hyacinth Queen of Hyacinths was bordered with H. *Mirandolina* (white), but the border was rather earlier and taller than those in the centre of the bed. Another bed containing H. *Fabiola*, and a similar border to that in the previous bed, was much better. Beds of Hyacinths alone in some cases were very good, and had a distinct effect, such as Duke of Wellington, Regulus, and Couronne de Cèlle; the last-named pale blue variety is very pretty. Narcissus Sir Watkin by itself, in several instances, is commendable. The Polyanthus, Anemones, Wallflowers, Auriculas, and Tulips will be about to flower when these notes are published. In Regent's Park the display is near to Great Portland Street Railway Station, where the spring and

summer displays have been made for years past. The mixing of varieties of Hyacinths in large beds is generally practised here, and by making the surface of the beds in gentle slopes, a very desirable relief is obtained. A large bed so planted this season contains H. Robert Steiger, Gertrude, and Grandeur à Merveille, Charles Dickens (dark blue), and Czar Peter were grouped in another instance, and Gigantea with Czar Peter. Gigantea, Czar Peter, and Charles Dickens together create a very fine effect. The beds of Narcissus are looking well, one very large one contains Emperor; others are planted with Empress, Horsfield, Sir Watkin, and such popular kinds. Amongst the Narcissus are dotted Wallflowers and Primroses, in order to prolong the display as far as possible until the summer bedding plants can be put out. The beds of Tulips will not be in bloom for some days yet. Although the beds contain the best-grown bulbs of all kinds, there are multitudes of Hyacinths, Tulips, Narcissus, Scillas, Muscaris, &c., in glades, under trees, and upon grassy slopes. They present such a beautiful picture that one might be pardoned for preferring it to that of the beds. The old bulbs that have become rather weak, are utilised for this purpose, and the visitor is bound to admit that they have been planted in positions selected with care and taste. The Narcissus, and in less measure the Tulips also, acquire vigour whilst growing in the grass; but not so the Hyacinths, which seem unable to maintain the vigour they possess when put out. The whole of the bulbs under grass in this park offer a lesson to many a gardener, and a magnificent sight to all who see them.

THE WEATHER.—After the abnormally wet March, April has set in with severity. In Scotland the snow is lying on the hills down to about 500 feet, and nearly every day there has been a fall of an inch or more, but it quickly melted. At night the frost has ranged from 8°–12° for more than a week. A correspondent from Kildermister reports frost in that neighbourhood to the extent of 14° on Tuesday last.

IMPORTATIONS OF FRUIT.—In the *Journal of the Board of Agriculture for March* are so few figures which should make our distressed agriculturists ask themselves whether their low estate is not, in a measure, their own fault. We append only the figures relating to fruits, &c., which can easily be grown in this country in much larger quantities than at present. "Amongst imports of fruit in 1896, the supply of Apples seems to have been nearly doubled, as compared with 1895, and the total considerably exceeds the arrivals of 1894, when close upon five millions of bushels were imported. The average value dropped to 5s. 1d. per bushel, against 5s. 10d. in the preceding year." The quantities of Apples imported in 1896 is stated to have been 6,177,192 bushels of the value of £1,582,471; Cherries, 96,047 bushels of the value of £105,811; Plums, 540,246 bushels, of the value of £241,782; Quinces, 6,085,505 cwt. of the value of £681,879.

CAPE FRUIT.—Since the arrival of the *Tartar* from the Cape—reported in an earlier issue—other steamers have reached this country with quantities of Grapes, &c. By the *Goth*, 641 boxes of white Grapes, and 41 boxes of red ones, and 9 boxes of Pears. The *Norham Castle* brought 55 boxes of red Grapes, 497 boxes of white Grapes, and 235 boxes of red Grapes. It seems a great pity that so large a proportion has been allowed to get spoiled. Assuming that the packing was at fault, it might be well to repeat the experiment tried some six years ago, when a London salesman, well accustomed to the work, went out to the Cape with a couple of expert assistants, taking a quantity of cork-dust and shavings with them; these "packers" instructed the South Africaners in the art, and the resulting consignments arrived in London in fine condition, and brought high prices. Mr. MOLTENO, of the Donald Currie Company, was highly satisfied with the experiment, the growing of fruits at the Cape for the English market having been started and fostered by that gentleman and his company; and it is to be hoped that he may

again be induced to place himself in the van of the Cape cultivators, and so restore confidence in those who have to deal with such valuable wares. Since the above has been in type, two more steamers have arrived from the Cape with Grapes and some Pears. The first on the record is the *Moor*, and she brought over 555 boxes of white Grapes, 50 of black, 90 of red, and 90 boxes of Pears. The reporter adds to this:—"Nearly all these consignments turned out in poor condition. A few boxes of red Grapes turned out in good condition, and realised fair prices." The second ship was the *Lismore Castle*, and her fruit cargo consisted of 309 boxes of white Grapes, 86 black, and 61 red. The note appended to this reads:—"With the exception of a few boxes of black Grapes, all this consignment turned out in poor condition." *Verb. sap.*

APPLES FROM THE ANTIPODES.—The officials of the P. & O. Steamship Company courteously send us the following:—"We have a wire from Melbourne of the following shipment of fruit, viz., per Orient Co.'s ship *Ormus*, 23,000 boxes; per P. & O. *Arctadia*, due here about May 2, 10,000 boxes."

PUBLICATIONS RECEIVED.—From the U. S. Department of Agriculture, *Farmers' Bulletin*, No. 15, *Some Insects Injurious to Stored Grain*, by F. H. CHITTENDEN, and (Division of Entomology) *Some Miscellaneous Results of the Work of the Division*; this is a record of patience followed by satisfactory results.—*Annual Report of the Secretary for Agriculture*, Nova Scotia.—From the Essex County Council, *Report and Handbook of the Technical Instruction Council for the Session, 1895-6*. This is a satisfactory report of instruction given in various centres in such subjects as geometry and mathematics, magnetism and electricity, chemistry, physiology, botany, agriculture, and various branches of art. Continuation schools are opened in connection with the ordinary schools, and languages, horticulture, navigation, dairy-work, and cookery, are but a few of the diverse subjects undertaken. The addition of a county school of horticulture to the county laboratory has proved exceedingly successful, and there is much competition for the courses of instruction therein. From Kolozsar, Hungary, the Director of the University Botanic Garden (Dr. GY. DE ISTVANFFI), sends a *List of Seeds Offered for Exchange*, which will interest the managers of similar establishments.

BOOK NOTICE.

FIRST RECORDS OF BRITISH FLOWERING PLANTS.

This is in itself a record, and was published originally in the *Journal of Botany*, by Mr. W. A. Clarke. The written record does not go very far back—not further than 1538 (William Turner)—so that from an archaeological point of view, the interest is not great, as the reader feels that the plant must have been in the country so many ages before the date cited. It might have been well to have inserted as an appendix the names given in the *Epinal Glossary* as cited by Canon Ellacombe in our columns on November 3, 1888, and which dates back to the eighth century. That the record before us is no mere dry list of names and dates may be seen from the following extract, which may also serve to show the general nature of the work, which we may add is published by West, Newman & Co., Hatton Garden:—

"*Urtica pilulifera*, L. Sp. pl. 983 (1753), 1640, 'Hath benee found naturally growing time out of minde, both at the towne of Lidde by Romney, and in the streets of the towne of Romney in Kent, where it is recorded Julius Cæsar landed with his soldiers, and there abode for a certain time, which it is likely was by them called Romania and (*sic*) corruptly therefrom Romney or Romny, and for the growing of it in that place, it is reported that the soldiers brought some of the seeds and sowed it there for their use, to rubbe and chafe their limbes, when through extreme cold they should be stiffe and benumbed; being told before they came from

home, that the climate of Brittain was so extreme cold that it was not to be endured without some friction or rubbing, to warm their bloods, and to stir up natural heat, from which time it is thought it hath continued there, rising yearly of its own sowing! *Park. Theatr.* 441."

HOME CORRESPONDENCE.

NARCISSSUS CULTURE.—I have read with much interest the paper contributed by Mr. Burbidge to the Birmingham Gardeners' Mutual Improvement Society on "Bulb Culture in England." In common with many other people, I have often wondered whether it was not possible to grow all these beautiful flowers from seed, or increase the stock by other means of propagation. Unfortunately, the literature and information on the subject seems to be somewhat scarce, and also beyond the means of people of my class, viz., working-men and allotment-holders. I am sure if you could induce Mr. Burbidge, Mr. Egleheart, or any of the great specialists in bulb-culture, or would yourselves give us a few brief articles on the subject, on either by seed or otherwise of the Hyacinth, Tulip, Narcissus, &c., they would be appreciated by hundreds of small holders, who, like myself, would like to grow them. I grow a few hundreds of the cheaper sorts for decorative and garden purposes, and last year tried a few Dutch roots of the late Tulips—self, hybridoms, and bizarres, with which I was so pleased that I selected seed from the choicest flowers to increase, and if possible, improve the stock. The difficulty with me is to know what lines to follow for improvement, if any is possible, time taken to hardy as the allied species. The flower of *Fosteriana* is remarkable for its two characteristic colours, the whole upper part being lemon-yellow, with a more or less conspicuous deep yellow crest; whereas, the turned-down segments or falls are of a deep violet hue. The bulb is very tender, and the roots are thin instead of fleshy, like those of *Iris alata* and other members of the *Juno* group. It is, no doubt, a precious and curious species, but it is too scarce and too troublesome in its requirements to become a general favorite. A coloured plate may be found in the *Bot. Mag.*, 7215, and reference is also made to it by Professor Foster in his excellent pamphlet on *Bulbous Irises*, pp. 44 and 82. The first publication was made by Dr. Aitchison, who discovered it in Afghanistan, at an altitude of about 4000 feet, and described it, in co-operation with Mr. Baker, in the *Transactions of the Linnean Society*, 2nd ser., Botany III., 114. *Ernst H. Kretzger.*

THE EUCHARIS MITE.—About two years ago, several pots of *Eucharis grandiflora* became infested with the mite here, and there being every probability of the stock becoming affected, I found that unless means were taken to get rid of the pest, the whole lot would have to be thrown away; one-half were treated in the manner I described in the *Gardeners' Chronicle* about twelve months since, and being so well satisfied with the result of the method, the second lot came to me for the same treatment, that of cutting away the decayed parts of the bulbs, afterwards washing the bulbs in a solution of lemon-oil, and now the whole stock is in a flourishing condition, without any indication of the mite being present (I pulled out a bulb from among the others in a 6-inch pot, by no means a fair sample, but clearly showing where it was cut with a knife twelve months ago). I have come to the conclusion, by my experience, that the too free use of the watering-pot during the winter months, when the plants are practically at rest, is largely the cause of the plants becoming so affected. The plants here are kept in a temperature of 65° to 70° during the winter months, and 75° to 85° during summer, with shade from bright sunshine, with a very moist atmosphere, and are occasionally lightly syringed overhead, not sufficient to cause water to run down the stem of the leaves into the bulb, thereby keeping them always in a wet condition. *W. H. Sharpe, Highwood Gardens, Rockhampton.* [The bulb sent seemed perfectly healthy. We thank you for the careful way in which the specimen was packed. En.]

TINNED ASPARAGUS.—Are your readers aware that at the present time tinned Asparagus is being imported into this country from California, and is sold here retail at 1s. per tin, a tin being enough for three or four people? I had it at dinner, and was quite unaware that it was tinned Asparagus until I was told. If the Americans can afford to tin Asparagus, surely this is one of the garden crops which our farmers could get to grow on sandy soil, and by arranging to have tin boxes ready, they never need again sacrifice their produce at a low figure. Again, there is no necessity for them to pack Asparagus in such small boxes, because there are many hotels and eating-houses where they would be glad to buy a large tin box; in fact, I see no end to this trade if properly

haailed at once. There is one difficulty which no doubt some of your correspondents will be very glad to find a means of getting over, viz., how the Asparagus is treated or prepared in the tins before it is soldered down. Surely we ought to be able to grow Asparagus in this country as well as it is grown in California. *Thos. Christy.* [The sample sent was excellent. En.]

WHITE MUSCAT VINE AT GUNNERBURY PARK.—Mr. George Reynolds has carried out a somewhat interesting experiment in one of the portions of the large range of vineries. It is a house of Muscat, consisting of several Vines planted about twenty years ago. The Vine at the west end appears to be a better variety than the others, with fuller and more compact bunches, and Mr. Reynolds brought down one of the rods of this, and laying it along the border, pegged it down at intervals, with the result that it has put forth roots into the border, and thrown up eight rods—sufficient to fill the house. With the exception of two of the rods, which spring from a portion of the rod which could not be brought down close to the ground, the remaining six may be said to be nourished by independent roots, as well as by the roots of the mother plant. Mr. Reynolds has always cut the finest bunches from this particular Vine; and this circumstance confirms the opinion, often expressed, that there are "strains" in the cases of particular varieties of Grapes, as in the case of some popular flowers. *R. D.*

IRIS FOSTERIANA.—This very rare species, intermediate between the *Xiphion* and *Juno* groups, flowered in the Bloemhof Nurseries, Haarlem, last week. The bulbs, which were formerly lifted annually, have not been removed since the autumn of 1895, and now flower for the first time. They are placed under the frame, but they will probably be as hardy as the allied species. The flower of *Fosteriana* is remarkable for its two characteristic colours, the whole upper part being lemon-yellow, with a more or less conspicuous deep yellow crest; whereas, the turned-down segments or falls are of a deep violet hue. The bulb is very tender, and the roots are thin instead of fleshy, like those of *Iris alata* and other members of the *Juno* group. It is, no doubt, a precious and curious species, but it is too scarce and too troublesome in its requirements to become a general favorite. A coloured plate may be found in the *Bot. Mag.*, 7215, and reference is also made to it by Professor Foster in his excellent pamphlet on *Bulbous Irises*, pp. 44 and 82. The first publication was made by Dr. Aitchison, who discovered it in Afghanistan, at an altitude of about 4000 feet, and described it, in co-operation with Mr. Baker, in the *Transactions of the Linnean Society*, 2nd ser., Botany III., 114. *Ernst H. Kretzger.*

WOOD-ASHES AND TURF-ASHES.—I saw in a recent *Gardeners' Chronicle* an answer about coal-ashes as a manure. Now the wood-ashes require a very little liquid-manure to be mixed with them, as there is plenty of a certain kind of plant-food in them, and if wood-ashes come into contact in quantity with the seed, they do harm and cause them to become sickly and pine away. The ashes of turf are the best absorbers of farmyard drainings, soap-suds, &c., and it is then a better dressing for the land than half the artificial manures sold. The farmers in general let it run into the ditches and waste it. I always watered my Asparagus drainings for mixing with soil, manure, turf-ashes, &c. Now as regards Potatoes, you see I am quite right in my estimation of wood-ashes, and I have always found it so. It affects Tomatoes in the same manner, it never comes from the soil or "the East," as most persons think, and have the idea that if it touches the bine first, it will be sure to run to the root and tubers within three days. *Abel Pairall.*

MONOGRAPH OF ODONTOGLOSSUM CRISPUM.—Two years ago, by the kindness of the editor of the Horticultural Press, I was enabled to procure many forms of this Orchid for the above monograph. I am sorry to say that of late the interest in the work has seemed to die off, and I rarely get fine forms sent me. I hope that 1897 will bring me all the good varieties in so many collections, that I may be able in the autumn to carry out my idea of publishing this work; it will be more than ordinarily interesting now that its subject has absolutely become the Orchid of the week. People may fancy that their varieties are not good enough to be mentioned in a work of the sort—that is not the case. When a plant has once borne a varietal or distinguishing name, it is useful if it be recorded, and there will be a greater and worse confusion than ever existing; already there are

some repetitions of names in the species. I may say that I shall be much obliged for any good *Odontoglossum* to record for future writings on other species. *De B. Cranshaw.* [All the varieties, named or unnamed, should be recorded. En.]

THE WEATHER IN MARCH.—In looking over my *Gardeners' Chronicle* to-day, I noticed the remarks of H. J. Elwes about the sort of weather experienced in the month of March—an open month, and one favourable to vegetation in general. It was the same in this part of Scotland. Narcissus, &c., are in full bloom; Rhododendrons, Daphnes, and Ribes all in bloom. Alas! on Monday, March 29, we had 6° of frost; on Tuesday, 12°, and 9° inches of snow. The snow soon disappeared on Wednesday, and we had 14° of frost; on Thursday, April 1, 15°; Friday, April 2, 12°; on the 3rd, 12°; the 4th, 12°; the 5th, 14°; and this morning, 9°. It is easy to imagine the damage that has been done, everything that was showing bloom being ruined for this season. Rain has commenced to fall now, so that we hope for more genial weather. *Alex. Crane, Gardener, Bridge of Weir, N.B.*

THE WEATHER IN ABERDEENSHIRE AND THE NORTH OF SCOTLAND.—March of this year will be remembered for its persistent and continued rains. The equinoctial gales raged both before and after the equinox, and the whole of the month was characterised by changeable and unsettled weather. So far as this county is concerned, it may be stated that, as there was a noted deficiency in the rainfall for February—it was 71 per cent. under the average for the month—we might be looked for a certain superabundance in March, and we got it. During the whole month we enjoyed only 63 hours of sunshine, which is not only the lowest figure applicable to any station, but is only half of the average total duration of bright sunshine in the north-east of Scotland for the month of March. There is some satisfaction to be derived from the fact that in the north of Scotland April is, as a rule, decidedly the driest month of the year. *W. Kelly.*

WEATHER LORE.—It was a saying of the gardeners of half a century ago, that just in proportion to the number of fogs in March would be the frosts in May. When I was a schoolboy, I used to ask what was the connection between the two, but never received a satisfactory reply. I should think years have elapsed since there was such an entire absence of fogs in the month of March. Blustering winds have prevailed, and they have doubtless driven the fogs to other lands. The conventional March with angry roar has extended all through the month, with a rainfall of probably an almost unprecedented abundance. Soils all at adhesive have been beaten down by the rains to the hardness of a bar floor; and the winds have hardened them still more. But little March planting has been possible, and gardeners are looking forward hopefully for April to bring genial open weather. Will May be destitute of frosts because there were no fogs in March? There is no more anxious time for gardeners than during the last two weeks of the month of May. *R. D.*

FROST AND FRUIT BLOSSOM.—Some trusses of buds of Pear blossom have been sent from Beckenham, showing that the recent frosts have had lamentable effect upon them. The exterior of the buds look as if scorched, and on cutting them open, the stamens were found to be destroyed. This may be a partial visitation only, but if a fair inference can be drawn from accounts received from other parts of the country, the injury done is not at all of a local character. Happily, there is generally an enormous amount of blossom on standard Pear trees, and it is to be hoped that a sufficient number of flower-buds will escape as will afford a good crop of fruit. *R. D.*

THE SPRING OF 1897.—During the thirty years or more that I have been a gardener, I never remember such a March as the one we have just passed through. There has been no east wind, no night-frost worth mentioning, very little dust, very little sunshine, and an extraordinary amount of rain. So far, I am in accord with Mr. Elwes; and while I preface any after-remarks by saying that, of course, I know that whatever is, is best, I am sure if I had to choose, I should welcome back again the old familiar east wind and the burning sunshine, even would I pray that the spring of 1897 might never have a successor like itself. Mr. Elwes very truly says that his remarks apply to a dry, hungry, limestone-soil in a very cold, backward district, and may not be equally applicable to more favoured soils and situations. In all

probability that quite explains the difference between his way of looking at things and my own; but I can only say that I never remember a spring which was less like a spring than this, and one which threw us back in such great disappointment. The joyousness of the season has been absolutely unknown; and while the windows of heaven have been open, and rain has been pouring down in torrents, day after day, and week after week, the flowers in my garden have all seemed as if they were quite out of spirits, and some of them looked as though they thought it was not worth while to take the trouble of opening at all. I am not singular in my present ideas. A few days ago I had a letter from Herr Max Leichlin, of Baden-Baden, and he compressed all he had to say about this matter into a line—"the weather here is abominable"—and so, with all due reverence, say I about the present state of things in the Isle of Wight. What puzzles me beyond everything else is this: the swallows have, in some few cases, made their appearance in the island a fortnight sooner than has ever been known before. What can be the reason for that? Is the sky in Africa and elsewhere so overclouded that they have come northwards in search of happier climes?—if so, they must bitterly rue their adventure, and had far better go back again to the place from which they came, and await some improvement here. Gardening in the Isle of Wight has almost been at a standstill, not only during the month of March, but all through the winter. I had some cartloads of sand and loam brought into my garden in November last, and I meant to use them at once for the construction of two or three large beds for bulbs, but where this sand and loam were thrown down on the path, there they are now, and there they seem likely to remain so far as appearances go, and this means that from November till now we have never once had three continuous fine days, or the beds would have been made long ago. A very large Magnolia conspicua, which is covered with its myriad blossoms and buds, is hardly worth looking at. It is browned all over. It cannot bear to be knocked about in this way, and drenched through and through. Anemones flop about in a thoroughly unhappy way; and Narcissi, which do bear up against it all, would look much better under a clear blue sky; and so, I think, it is with most other things. *Fritillarias* hold their own, and *Eranthis*, it is to be admitted, are distinctly better for the absence of cutting frosts; but this is as nothing when compared with the other side of the picture. I tremble for not a few bulbs which I planted a short time ago, and which I fear may rot in the ground; and beyond everything else, I have passed through an agony on account of several hundred *oneoclytus* lises which, if we are to have any fine weather at all, will, I am sure, reward me this year for all my trouble regarding them, but which may give it all up in disgust at the eleventh hour if this sort of thing is to go on. Moreover, how can they be ripened for another year if they are to have no trace of sunshine at all; and what will the flowers of 1898 be like if maturation in the summer is rendered impossible? I hope I have not written in too querulous a strain. I do not think I was in a complaining mood before Mr. Elwes's words came to hand, and now I quite acknowledge that his explanation is correct. I only say that the plants and bulbs in the Isle of Wight would dearly like to have their accustomed flood of sunshine at this time of the year; that my lises would clap their hands if only it would come; and I cannot help thinking that I should rejoice in it myself, and I hope that, subject to arrangements of a wider sort, which I do not understand, and with which I have nothing to do, the spring of 1897 may never be repeated here—in fact, I should welcome none less in the future than one like the present, of all the springs we have had during the last thirty years. *H. Ewbank, St. John's, Ryde, April 8.*

FRUIT REGISTER.

APPLE BRAMLEY'S SEEDLING.

This late-keeping cooking Apple does not appear to be a free-fruited variety, at least, in some districts of the southern counties of England. Seven years ago I planted some bush trees on the Paradise stock, along with several other kinds, in two different gardens, the soil in one being rich and light, and in the other a moderately good but heavy loam; and in neither has this variety been a success. The trees

have made stout firm growth, but do not fruit freely, never having produced in their best year more than a third of a crop, and this after root-pruning has been carefully carried out; therefore I conclude it is a shy bearer, and only adapted for certain localities. My view of the subject was endorsed recently when discussing the merits of this and other Apples with the foreman of a large fruit-tree nursery, his opinion being that "Bramley's was decidedly what may be termed a local Apple," and more suitable for growing in the midland rather than southern counties. As far as its keeping qualities are concerned, my experience is that it is in no way better than Lane's Prince Albert, which is a constant and sure cropping variety of equal, if not superior, cooking qualities. *C. H.*

NOTES ON PEARS AT KEDLESTON, DERBY.

Being in the vicinity of Derby recently, I had the pleasure of inspecting the splendid collection of Pears on the walls at Kedleston, which, I may add, extend together to a length (at a rough guess) of quite a mile, and form a great feature of the place. Since taking charge of Lord Searsdale's gardens, Mr. Voss, who previously had been a successful and enthusiastic grower of hardy fruit, as his successes at the Royal Aquarium and Manchester Shows testify, has rejuvenated the majority of the oldest and largest trees, by budding more serviceable varieties on to young shoots springing from the side branches, which had been previously cut back to within 6 inches of the main stem, this being a quicker and to all appearance equally satisfactory method of covering walls than renewing wholesale with young trees. Many, however, were of necessity replaced by young trees, both horizontal and cordon-trained, the clean, bright-looking wood and plump buds showing their vigour and healthiness. Some of the varieties specially noticeable, were Alexander Lambre, which is here a good cropper, and keeps well till January, though Mr. Voss does not consider its flavour so good here as in the south. *Beurré Bachelier* is of good flavour and fine appearance, as also *Bergamot d'Esperey*, which is a first-rate keeper. *Beurré Diel* is remarkable for cropping, fine colour, and size, and the fruits keep well. *Easter Beurré* does well, and it furnishes a supply of late Pears. *Brockworth Park* is a heavy cropper, and excellent flavour, compared with others from less favoured localities. *Doyenné du Comice*, considered by Mr. Voss as the best Pear in cultivation, is largely grown, though it does not reach the ideal as exhibited by him at the Royal Aquarium. *Glou Morceau* keeps well, but it is deficient in flavour. *Marie Benoit*, *Marie Louise*, *Marie Louise d'Uccle*, do well, and are good in flavour, as is also the honeyed *Seckle*. *Pitmaston Duchesse* I was surprised to hear spoken of in very poor terms; and that *Thompson's* and *Passé Crassane* are poor in flavour, but bear abundantly. *Williams' Bon Chrétien* grows remarkably fine, and the flavour is excellent, I was told; as is also that of *Winter Nells*, which here keeps well into the month of February, but is little esteemed for dessert. *Cheestrian*.

TWO NEW WINTER PEARS.

We learn from the *Jardin*, p. 41, that two varieties of Pears raised by M. Clavier of Tours, are being distributed by M. Pinget, Guindon. They are named respectively *Beurré Souvenir de Madelain*, and *Beurré H. Martinet*. The first is of middle size, obtuse pyriform, skin deep yellow colour, a little bronzed, and spotted with brown; eye of middle size, and set in a shallow basin. The stalk is short; flesh very fine, whitish, juicy, of a pleasant vinous flavour. A fruit of extra good quality, ripening during January and February. The second forms a strong-growing pyramidal tree, and bears abundantly. The wood is of a reddish-brown, with prominent buds. Fruit is large, conical, and irregular, rind greenish-yellow, with a few russet spots; eye of moderate size, is situated in a wide basin, the stalk is short, and the flesh white, very juicy and fine, strongly aromatic, and of excellent quality. It begins to ripen in January, remaining good till the end of March. These varieties, after being tested by the Tours Horticultural Society, received the highest award of the Society.

APPLE YORKSHIRE GREENING.

This fairly well-known variety is one of the best culinary Apples I know of at this season. I have grown it for over forty years in three English counties, and nearly always the trees have carried good crops of fruit of first-rate quality. The fruit when thinned out, or not too abundant, is large, and it keeps well till May. I am using the fruits at the present time. It has an agreeable acidity; the rind is of greenish-yellow tint. The tree is a free grower, with a rambling habit, and is not liable to the American blight. *William Smythe, Busing Park Gardens, Alton, Hampshire.*

NURSERY NOTES.

B. S. WILLIAMS & SON.

A CHARACTERISTIC feature of this nursery at Upper Holloway consists in the large number of ornamental or decorative plants to be seen there, including many species for the stove and for the greenhouse. Such are the Palms, the *Aralias*, the *Primulas*, many of the *Cordylines*, *Ferns*, *Araucarias*, *Aspidistras*, *Codieums*, and numerous other less popular plants. At the present time there is an excellent hatch of *Aralias* in one of the houses in splendid growth, and excellent in every way for the embellishment of the dinner-table. They are all well-grown plants, but one does not frequently see good batches of them.

The most slender-habited of all is *A. gracillima* (or more properly, *A. Veitchii gracillima*); tender, no doubt, but difficult to excel as a table-plant, providing there is a stock of them, and injury to a specimen through exposure is not of vital moment. Then follows *A. elegantissima*, but little broader in the parts, and when well grown, a distinct and handsome species. *A. Veitchii*, less tender; *A. Chabrierii*, and *A. Regina*, with broader leaves, are all useful in different ways. Unfortunately, it is seldom possible to strike cuttings; and as the stock must be increased by grafting, they are not so common as they would be could they be raised at less expense. There are thousands of Palms, from seedlings with their first leaves to useful specimens of several feet high. Notwithstanding the variety of Palms that now exist, including several very pretty and useful species, the demand even from private gardens is for the common species of *Kentia*, *Cocos*, and *Geonoma*. *Kentias*, especially, are a very popular Palm, and at the present time specimens of a few feet in height are not more than equal to requirements. Were *Geonomas* and *Lisualas* as easily cultivated, and *Livistona rotundifolia* and other species as inexpensive as *Kentias*, they would be more frequently seen. *Phoenix* *habeliformis* and *humilis*, both included in *Williams' collection*, are useful species of easy culture. Several of the *Phoenix* group, including *P. rupicola*, are also extremely decorative plants; but these are not a tithe of the available Palms for conservatory decoration. *Codieums* (*Crotons*) are given a fair share of space in one or two of the warmer houses, and the collection may be said to embrace a fine selection of varieties, since many of the inferior ones have been weeded out. Growth is still becoming active in these plants. There are pretty plants of *Cordylines* (*Draecenas*), of suitable size for the decoration of the stove or of dwelling-rooms, and some of the newer varieties, such as *Miss Glendinning*, possess handsomely-coloured leaves; though the old *D. Cooperi*, *D. Baptisti*, and *D. terminalis* are still desirable plants. After seeing hosts of these and similar decorative species, we notice an unusually large quantity of plants of climbing habit. Whether for pillar, wall, or roof, in hot or cool structures, there need be no difficulty in selecting suitable subjects, for they occupy the greater part of the space in several of the large houses.

Passing to a different class of plants, we noticed a stock of *Rhododendrons*. In one of the cooler houses, where many of the plants are of considerable proportions, such varieties as the following were carrying flowers, *R. assamicum graveolens*, *Countess of Had-*

ington, Denisoni, multiflorum, Comet, Forsterianum, Princess Alice, and Lady Alice Fitzwilliam.

The smaller-flowered varieties were well represented in a warmer structure, including such well-known kinds as Queen Victoria, Princess Alexander, Taylori, and T. rubra, Jasminiflorum, Princess Teck, and Princess Royal, one of the best of the whole group, as it is seldom without flowers. Amongst the Indian Azaleas, a new one, called Professor Wolters, struck us as being exceptionally fine. It is rose-coloured, with a very warm blotch on the upper petals; the flowers are of good size, and the margins wavy. In one of the houses a number of pot Vines is being grown, which is, we believe, a new

Obituary.

W. G. HEAD.—It is with sincere regret we have to record the death, in the sixtieth year of his age, of Mr. W. G. Head, the able and respected Superintendent of the Gardens of the Crystal Palace, on Saturday last, after a lingering and extremely painful illness. Mr. Head was about eighteen years in this position, having succeeded Mr. George Thomason. To exhibitors and *habituals* of the Crystal Palace Mr. Head was well known, and much liked, ever obliging to others, never sparing of himself, or seeming to get tired of his somewhat harassing work; and the excellent manner in which the gardening of the

Gardens of the Calcutta Agri-Horticultural Society at Alipore. After a stay of six years in India he returned to England, and was shortly afterwards appointed Garden Superintendent at the Crystal Palace. He was buried at Chiswick on Wednesday last, the 7th inst. The portrait, of which we give a reproduction, was courteously furnished by Messrs. Negretti & Zambra.

RICHARD PFAU.—We regret to have to announce the death of Mr. R. Pfau, at his residence, San José, Costa Rica, on March 14 last. His death was caused by a throat trouble of long standing, which rendered his last days ones of great suffering. Mr. Pfau, who was of Swiss nationality, and well known in connection with Central American Orchids, has for some years been successfully carrying on an important establishment for their culture, and for fruits and other kinds of trees and plants, for sale in Central America. Last year he paid a visit to this country, and succeeded in bringing home a small lot of Epidendrum Endresii and of Miltonia Endresii, both very difficult species to import. His notes on the climatic peculiarities in which some of the rarest Costa Rica plants are found growing we have published in the *Gardeners' Chronicle* on several occasions.

MRS. T. W. BOND.—The many friends of Mr. T. W. Bond, gardener to C. L. N. Ingram, Esq., Elstead House, Godalming, and one of the members of the Orchid Committee of the Royal Horticultural Society, will be pained to learn of the death of his wife and of the circumstances leading up to it. It appears that Mrs. Bond had been in a nervous and depressed condition for some few days, when her youngest son, a boy of about seven years, and who was playing in a meadow where a two-horse roller was at work, jumped on the roller for a ride, and, unfortunately, fell, and the roller passed over him. The ground was soft with the rains, and he escaped with a fractured skull, but is now thought likely to get over it. The shock, coming as it did at a time when she could least withstand it, caused the mother's death. In order to remove Mr. Bond for a time from the scene of his troubles, Mr. Ingram is sending him on a tour through France.

SOCIETIES.

ROYAL HORTICULTURAL Scientific Committee.

MARCH 22.—*Present:* Rev. C. W. Dod (in the Chair); Mr. J. Douglas, Mr. Mitchell, Dr. Muller, Rev. W. Wilks, Dr. Bonavia, and Rev. G. Henslow (Hon. Sec.).

Balls with Arrested Roots.—With reference to the samples sent the last meeting by Mr. Atkinson, Mr. Douglas was of opinion that the treatment had perhaps not been quite advisable, for he thought that they should have been put out-of-doors, and not in a shed, and covered with 6 inches of Cocoa-put fibre. If, however, there was something deleterious in the compost sent for inspection, this could at once be ascertained by an analysis. Such, however, would be beyond the province of the Society.

Wireworms among Carnations.—Mr. Weguelin of Torquay asks for remedies against this trouble. The suggestions of Linseed cake, Carrot, scopolin Potatoes, as for slugs, &c., were made, but it would appear that in the present case they are too numerous for such traps, as indeed the writer admits. Gas-line was recommended as the only very efficient remedy, but it might injure the Carnations. The laud having been well-dressed with lime or soot shows that these ingredients are quite insufficient, though gas line would probably have been effective.

Carnation Leaves Damaged.—Mr. Fagents of Honey Pots, Westfield, Woking, sent some leaves with peculiar red streaks upon them. They were forwarded to Kew for further investigation.

Germination of Mushrooms.—Inquiries were made by Mr. Bicker of Gibham Park as to the somewhat contradictory statements in books upon this subject, as in Mr. J. Wright's *Primer of Horticulture* it is stated that it has been observed, whereas in Dr. Scott's *Flowerless Plants* (p. 268), it appears to have never been seen. Mr. W. G. Smith, having been appealed to by the secretary for his opinion, writes as follows:—"I have many times seen the spores of the Mushroom and its allies germinating. With me they have often quickly germinated on glass, and more often on moist blotting-paper. The fungi must be allowed to shed their ripe spores on to the moist paper. After a day or two a damp microscopic slide must be placed upon the part of the damp paper where the spores have fallen, and it will often



THE LATE MR. W. G. HEAD.

departure at this nursery. We need hardly mention the Vandas as most gardeners are aware that they succeed admirably here. The Cattleyas also, and the Orchids generally were looking well. There was not much bloom to be seen, but the following were noticed amongst others:—The new *Eulophiella Elisabethae*, *Ada aurantica*, *Dendrobium cucullatum giganteum*, *Vanda enavis*, *Laelia cinnabarina*, *Cattleya citrina*, *Cymbidium Devonianum*, *Cypripedium exul*, *Dendrobium Wardianum*, *Odonoglossum crispum*, *O. cirrosium*, &c. *Vanda teres* is just showing its flower spikes.

A house full of *Cliveas* in bloom make a good display, and include many fine varieties, notably one called *Queen Victoria*, which was noticed in our report last week of the Royal Botanic Society's show. An adjoining house is full of *Hippocrepis* in flower.

Palace was maintained, was often the theme of well-merited praise.

Mr. Head's experience as a gardener was very varied. At an early age he first entered the then very famed gardens at Arundel Castle, in his native county, he having been born at Worthing. Here he met Mr. A. F. Barron of Chiswick, and began a friendship which lasted to the end of his life. Leaving Arundel he went to Shrubland Park, Ipswich, famous for its gardens at that period; and from thence to Drumlanrig under Mr. McIntosh. We next find him in South Wales for a short time, cultivating Pine-apples; and then as foreman in the Royal Horticultural Society's Gardens at Chiswick, with his friend, Mr. Barron. From Chiswick he went to the Royal Gardens, Kew, where he stayed some time; and thence went to India, to take charge of the

happen that some will be found to have germinated. I have seen the germinating examples whilst drawing the spores with a camera lucida. . . . Messrs. Wood of Wood Green managed to get spawn of the Morel (from material sent by me) to germinate and form spore. I once exhibited before the Royal Horticultural Society a specimen of *Coprinus atramentarius* raised by me from spores. This species can be easily raised (and it is not very far removed from the Mushroom) from spore to perfect fungus. The time it takes is three months. I believe some of the French manufacturers of Mushroom spawn have used *Mushrooms* direct from the spores. The spores of some of the allies of the Mushroom germinate readily in expressed juice of horse-dung. I have many times seen them, and am not the only person who has seen them in glass.

Trametes radiciperda, Hartig.—Dr. Plowright sent a specimen of this fungus "to illustrate the mode in which it develops its hymenophore upon the roots of an affected Scotch Fir. The hymenium is resinous. The fungus finds an entrance into the roots of living Fir-trees by the extremities of the mycelian hyphae insinuating themselves between the bark scales. It rapidly extends between the living bark and wood, and soon reaches the wood itself, where it at once fructifies. The mycelium can travel in the ground from tree to tree."

Barley-smut.—Dr. Plowright also sent the following communication upon the injurious effect of this fungus upon the colour of the crop. "It is only a few years ago—a very few when one looks back upon it—that our attention was drawn by Mr. J. L. Jensen of Copenhagen to the fact that there are two distinct kinds of smut upon Barley. At that time was in question the regard to the two smuts as being due to two distinct species of *Ustilago*, but since they are not only easily distinguishable by the unaided eye, but also differ in the size and form of their spores, and as the latter have been found to germinate in a totally distinct manner, there is now no doubt about it. Our American Congress at that time repeated the protective measures suggested by Mr. Jensen, and confirmed their efficacy; but here the matter stopped, for the simple reason that the damage done by smut was trivial, and from a monetary point of view the dressing of seed Barley was a needless expense. A few years ago a circumstance came under my notice which materially alters the estimate of the cost of a healthy crop. Wheat is rather an extensive grower of Barley in West Norfolk drew my attention to the fact that two years ago his Barley was of an excellent colour while it was in the stack; but when it was threshed it was so discoloured that he had to reject a very large portion indeed for it. He attributed the damage to colour to the number of smutted ears which remained intact when the crop was harvested, but which, by being broken up in the process of threshing, discoloured the whole sample, just in the same way as blighted wheat does. Fortunately, he had kept some of this discoloured Barley. On inspection it looks as if it had been damaged by exposure to the weather. When a little of it, however, is shaken in a test-tube with clean water, the water becomes discoloured, and a drop placed under the microscope is seen to be full of *Ustilago* spores. So convinced was this gentleman of the cause of the discoloration, that in the next season he dressed his seed Barley with the ordinary sulphate of copper dressing, which is used for seed wheat for the prevention of smut. The result was eminently satisfactory; for that year his crop was free from the disease, and the grain, of good colour, realised a proportionately good price. The ordinary *Ustilago* ear, as it used to be called, had no detrimental effect on Barley, beyond destroying a certain percentage of plants, its spores being all blown away long before the harvest; but with the species in question, which, by the way, has received already a considerable number of names—Mr. Jensen originally called the variety *festuæ*—the ears in their shape, the awns do not fall off, and the kernels are converted into solid compact masses of black spores; not so compact, however, as to withstand the concussion of the threshing-machine without being disintegrated into fine powder, which becomes scattered over the healthy kernels." With this communication were received: (1) Specimen of the compact form of Barley-smut, gathered on July 1st last, at which time the common Barley-smut had all disappeared from the field. (2) Three samples of Barley, two of which are discoloured by the smut, as may be shown by shaking them in water and examining the washings. (3) A sample of healthy Barley from which no spores could be washed.

A vote of thanks was unanimously given to Dr. Plowright for his interesting communications.

Portugal Laurel with Defective Foliage ("Silver-leaf Disease").—Rev. W. Wilks showed branches, one healthy for comparison, the other showing a silvery appearance. It is a well-known case, and apparently attributable to defective nutrition. The peculiarity resides in the fact that the upper epidermis becomes detached, and the presence of air gives the whitish appearance. The palisade tissue also separates readily from the mesophyll, and its cells are easily broken tender. There is no trace of fungi or other organism. Mr. Heslop observed that a tree in his garden exhibited the same appearance and died. Its roots were found to have penetrated pure gravel.

PEOPLE'S PALACE HORTICULTURAL.

April 1, 2, 3.—The spring show of this Society took place in the Winter Garden, and exhibited a number of objects containing the exhibits forming a fringe to the collection of large specimen plants which are the permanent objects of this

building. The schedule is divided into three sections. The first, for those exhibitors residing in the more open and favoured spots, such as Forest Gate, Leyton, on the boundaries of Victoria Park, &c.; second, those members residing in the more densely populated parts, as Kingsland, Stepney, Poplar, Plaistow, &c.; and a third, for children residing anywhere in the district. Altogether, there were fifty-three classes, and very few in which no entries were made. Some excellent *Hyacinths* and *Tulips* were staged; and in the class for those of the first-named, pot-grown, some remarkably fine spikes appeared. The improvement in the quality of the *Hyacinths* exhibited since this show was established is encouraging. Some praiseworthy collections of six pots were staged. *Tulips*, three bulbs in a pot, were also good. Not less well done were the *Polyanthus Narcissus*. Collections of plants in full flower were represented by bright, well-grown and blooming *Cinerarias*, *Primroses*, *Cyclamen*, *Auriculas*, *Clivia elastica*, &c. In the class for three flowering plants, *Azaleas* and *Richardias* were prominent. The three best foliaged plants, which, though they came from one of the more open neighbourhoods, had been grown in windows, consisted of a very fine piece of variegated *Aspidistra*, a *Pteris tremula*, finely developed, and a good plant of *Araucaria* *4 feet*. The best specimen foliaged plant was *Ficus elastica*, 4 feet or so in height, and well feathered with leaves down to the pot. The whole character of the show speaks well for the activity shown by this rapidly-growing society.

CARSHALTON, BEDDINGTON, AND WALLINGTON HORTICULTURAL.

MARCH 31.—The annual anniversary dinner of this flourishing Surrey society was held on the above date in the Fitch Hall, Carshalton, Mr. Cosmo BOSSOR, M.P., presiding, supported by J. HALSEY, Esq., A. H. STEELE, Esq., President of the Society, and other members of the neighbourhood. Letters expressing regret at being unable to be present had been received from Sir Trevor Lawrence, Bart., Rev. W. Wilks, M.A., P. Crowley, Esq., and supporters of the Society.

Mr. STEELE, in response to the Chairman's toast, "The Beddington, Carshalton, and Wallington Horticultural Society," said, in the course of his remarks, that the Society was started in 1889 in a little schoolroom at Beddington Corner. They had twenty exhibitors. Gradually they had increased in prosperity, and he must say that they had been helped by the Council and other members of the County Council, which found them judges who were above suspicion. They had invited persons from outside districts, and had thrown open the amateur classes to all Surrey. They had also started a society for the encouragement of small parcels of poultry, which they had thrown that open also to the county of Surrey. Let them have good honest competition, and improve their horticulture and poultry-keeping. They should not look upon it simply as a question of putting money into their pockets, because they could do that without having any show at all. He believed that the improvement which had taken place in horticulture in this district had been largely due to that Society. Last winter he took a hurried tour through Europe, and the only place in which they had allotments similar to the allotments in this country was near Bremen. There the smaller tradesmen and the labourers took patches of ground and cultivated them, but he did not think their cultivation was to be compared to the cultivation of the allotments in Surrey—at all events, in that district. There was another thing they had done by that Society. They had, with the help of Mr. Halsey, had a show of Potatoes, which he believed had never been equalled. In that show they had *Potatoes* of the same class grown in different soils. The result was that in some of the soils some of the *Potatoes* did badly. Last year *Potatoes* in this district went rotten wholesale. So impressed was he with the result of the Conference the year before that he had a quantity of *Potatoes* heavily limed with unburnt lime when they were planted, and those *Potatoes* came up clean, a very small amount only rotted away. Of course, one year was not sufficient experiment, so he should try it again on a larger scale. He also found that if *Potatoes* as they were dug were sprinkled with lime, they kept free from disease in the clumps to a large extent. The Society had, by making the soil more fertile by the present time they had a sum of about £112 or £114 in hand, in case they had an unsuitable show-day.

Other speakers addressed the meeting at considerable length.

ROYAL CALEDONIAN.

April 7, 8, 9.—With winter lingering in the lap of spring light sunshine and genial air were almost despaired of, the thoughts of the council of the Royal Caledonian Horticultural Society turned not lightly to the first of their annual series of Edinburgh shows. The past month is said to have been the most backward March experienced since the spring show was instituted, and as gardeners were reported to be finding considerable difficulty in bringing forward, a marked falling-off in the number of entries the Council were fully prepared for. These fears have not been realised, as a matter of fact the entries were within nine of those of last year, which, with the entries, obtained the record show. This is exceedingly satisfactory, and equally so is the general nature of the exhibition.

The bulk was flowering plants, and if a stronger representation of foliage plants would have enhanced the show from one point of view, visitors to the Market will, in such a season, be disposed to do anything but quarrel with the wealth of flower. In this connection it may be mentioned that the Council have given effect to a suggestion which added very much to the interest of the show, the floor of the Market being braced up in insular groups, instead of having long lines on straight tables. As usual, the leading firms of nurserymen gave their valuable support. Messrs. R. E. LAING & SONS and THOMAS METHEVE & SONS were, for instance, responsible for the largest of the groups. Other firms who exhibited were the some lovely *Amaryllis*, seedling *Clelveas*, and new varieties of Indian *Azalea*, while Messrs. METHEVE showed well-flowered *Clematis*, not usually seen at this time of year, *Liliums* and *Azalea Mollis*. The gardeners' groups were smaller, but very choice. Mr. C. STEELE, of the Glen, was never better represented, his new dignity of member of the council having probably led him to improve even on his splendid register in former shows. There was probably nothing in the show so remarkable as Mr. M'INTYRE's exhibition of greenhouse *Rhododendrons*, which were perfectly flowered. We understand that the council of the Society have decided to give a special award in this case, and to confer a similar distinction upon a display of magnificent *Cyclamen* staged by Mr. LUNT, Dunblane. *Azaleas* and forced plants were the features of the show, *Hyacinths* occupying a subordinate position. From London, Messrs. BARR & SON sent sixty varieties of the flower, which were made up a beautiful table at the north side of the Market.

The following are some of the principal prizes:—

GARDENERS AND AMATEURS.

PLANTS.

Table of plants, circular, 12 feet in diameter, for effect.—1st, Mr. M'INTYRE, The Glen; 2nd, G. WOOD, Oswald Road, Edinburgh.

Two forced plants in bloom, not fewer than eight varieties, including *Hyacinths* and *Tulips*.—1st, M. M'INTYRE; 2nd, W. BENNETT, Huxley Lodge, Gogar.

Six forced plants in bloom, distinct varieties, including *Hyacinths* and *Tulips*.—1st, M. M'INTYRE.

Four Azalea or Greenhouse *Plants*, in flower, distinct varieties, and not more than two *Azaleas*.—1, M. M'INTYRE; 2nd, J. COCKER, Christ's Hall.

Four Stove or Greenhouse *Plants*, in flower, distinct varieties, and not more than one *Azalea*.—1st, M. M'INTYRE.

Three *Azalea* indica, pots not exceeding 9 inches.—1st, M. M'INTYRE; 2nd, J. GILCHRIST.

Four foliage plants, distinct species, exclusive of *Potatoes*.—1st, J. M'CARNEY, Liberton; 2nd, W. BENNETT.

Six foliage plants, pots not exceeding 9 inches, exclusive of *Potatoes*.—1st, D. MACKAY, Kingston Grange; 2nd, M. M'INTYRE.

Six table plants, distinct varieties, pots not exceeding six inches.—1st, D. MACKAY; 2nd, M. M'INTYRE.

Six *Pots*, in pots not exceeding 9 inches.—1st and 2nd, G. WOOD.

Six *Roses*, in pots, distinct varieties.—1st, D. MACKAY.

Twelve *Cyclamen*, not fewer than three varieties.—1st, T. LUNT; 2nd, M. M'INTYRE.

Six *Cyclamen*.—1st, T. LUNT, Dunblane.

Four pots *Amaryllis*.—1st, W. GALLOWAY; 2nd, M. M'INTYRE.

Six *Cinerarias*.—1st, D. KIDD; 2nd, J. CUMMING.

Four Japanese *Maples*, in pots.—1st, A. LAING, Salisbury Green.

Four *Orchids*, distinct varieties.—1st, M. M'INTYRE; 2nd, F. NICOLL, Perth.

Three *Exotic Ferns*, distinct species, exclusive of all others, for which prizes are offered.—1st, J. NAVER, Rockville; 2nd, J. HITCHMAN.

Three *Adiantums*, distinct varieties.—1st, J. NAPIER; 2nd, J. M'FARLANE.

Six Dwarf *Ferns*, distinct varieties.—1st, J. STEWART; 2nd, J. BRISTON.

Three *Lycopods*, distinct species.—1st, T. GIBBS; 2nd, G. HITCHMAN.

Six *Primula sinensis*, not fewer than three varieties.—1st, J. F. NAHINE; 2nd, M. M'INTYRE.

Six *Auriculas*, Alpine, distinct varieties.—1st, G. LEE; 2nd, R. STANARD.

Six *Alpine Plants*, distinct species, excluding bulbs.—1st, A. PATTERSON; 2nd, T. M. WHITEHEAD, Selkirk.

CUT FLOWERS.

Collection of Cut *Daffodil* Flowers (not *Polyanthus Narcissus*), not fewer than fifty distinct kinds.—Rev. G. P. HAYDON, Hatfield Vicarage, Dunsmuir.

Twenty-four *Roses*, not fewer than eight varieties.—1st, G. MANSON, Bathgate; 2nd, D. KIDD, Musselburgh.

Twelve *Roses*, not less than six varieties.—1st, W. ARMSTRONG, Musselburgh; 2nd, A. BAYCOCK, Innerleithen.

Six *Pots Spring Bulbs*, distinct varieties, exclusive of all others for which prizes are offered.—1st, J. NAPIER, Rockville, Murrayfield; 2nd, A. M'INTYRE, Irvine.

Twelve Roses, Maréchal Niel.—1st, G. M. DOUGALL; 2nd, G. MANSON.
Twelve Camellia blooms, not fewer than six distinct varieties.—T. BOWMAN, Ladbroke.

FAVIT (OPEN TO ALL).

One Pineapple, not less than 4 lb. in weight.—M. M'INTYRE, The Glen.
Six pots Strawberries.—1st, M. M'INTYRE; 2nd, J. CUMMING, Liberton.
Two bunches Grapes, Black.—1st, W. SMITH, Oxenford Castle; 2nd, D. KIDD, Garberry Tower, Musselburgh.
Two bunches of Grapes, white.—W. SMITH.
Twenty-four Kitchen Apples, at least six varieties.—1st, G. MACKINLAY, Wrist Park; 2nd, J. DAVY, Garlistown.
Twenty-four Dessert Apples, at least four varieties.—1st, J. CAHENS; 2nd, G. MACKINLAY.

VEGETABLES (OPEN TO ALL).

Collection of Vegetables, twelve distinct kinds.—1st, W. HARPER, Perth.
Two Cucumbers.—1st, J. GRAHAME, Wishaw.
Two Tomatoes.—J. CARETHERS, Cornstophart.
Basket of Mushrooms, not less than one quart.—1st, S. TANNER, Moringside Drive; 2nd, J. GRAHAME.
Fifty Pods French Beans.—1st, J. WALKER, Dollar; 2nd, J. COSSAR, Dunbar.
Six Heads Sea Kale.—1st, W. COLLINS, Stoney Hill.

PLANTS (OPEN).

Twelve Hardy Rhododendrons, distinct varieties.—1st, R. B. LAIRD & SONS, Murrayfield.
Four Azalea Indica, distinct varieties.—1st, J. DOWDIE.
Eighteen Forced Plants, not fewer than twelve varieties.—1st, J. DOWDIE.
Twelve Forced Plants, not fewer than six varieties.—1st, J. DOWDIE.
Six Palms, in pots or tubs, distinct species.—1st, LAIRD & SONS.
Twelve Conifers, in pots or tubs, distinct varieties.—1st, DICKSON & SONS; 2nd, LAIRD & SONS.
Twenty-four evergreen shrubs, distinct varieties.—LAIRD & SONS.
Twelve Japanese Maples in pots.—1st, LAIRD & SONS; 2nd, J. DOWDIE.
Twelve plants for table decoration, distinct varieties, pots not to exceed 6 inches.—1st, LAIRD & SONS; 2nd, J. DOWDIE.
Six Auriculas, Alpine, distinct varieties.—1st, J. DOWDIE.
Six Auriculas, stage, distinct varieties.—1st, J. DOWDIE.
Twenty-four Hyacinths, not fewer than 12 varieties.—KEEN & SONS, Roxburgh.
Six pots of pans Tulips, distinct varieties.—A. E. CAMPBELL, Gourick.
—Extract from "Edinburgh Evening News," April 7.

COLONIAL NOTES.

RHABDADENIA BIFLORA, Muell. Arg. (ECHITES BIFLORA), Jacq.

The seedless tubular flowers of this are from 2 to 2½ inches wide when fully open, and in colour of a pure white, with the throat yellow. The whole plant is glabrous; its opposite leaves are of a milk-white beneath, dark green above, wedge-shaped at the base, and abruptly terminated by a small point or mucro at the top of the leaf. The pretty climber grows in the Mangrove swamps, and lights up the sombre green colouring of the Mangroves with its white flowers when in bloom. The flowers are followed by cylindrical-shaped pods, inside of which lie the elongated seeds, tasselled at one end by a tuft of fine white hairs. Among the West Indies, it belongs also to Grenada.

ARECA CATECHU.

The Betel Nut Palm is represented by many permanent specimens growing in the rich Palm collection of the Botanic Garden, Grenada. The object of the present note is to chiefly state how highly fragrant are the small white flowers which are produced in large quantities together. Not unfrequently, visitors to the Botanic Garden have wondered from whence the fragrance has come, the chances being, that just beside them is a flowering Betel Palm.

ECHITES SYMPHYTCARPA, Mey.

Whether this be really the above species or not, it is a plant fully worthy of notice in a horticultural journal. Most of its characteristics agree with those given in Grisebach's Flora of the British West Indies, but not so clearly as to make it quite certain that it is the plant described. Beyond this, we have nothing further for the moment to guide us. It is a climber, densely covered with hairs; and the attractive flowers 2½ inches wide are very showy, the centre being

vermillion-coloured surrounded with a broad band of yellow, externally it is of a downy white. The plant is continually in flower. As might be expected, a copious white juice flows from the plant when the rind is cut or ruptured. The larger leaves are about 5½ inches long, by 2½ inches wide; and the length of the seed pod is about 5 inches. There are plants in the Botanic Garden which were raised from seeds received from Trinidad, of which island it is a native, and where it fruits freely. It is doubtful whether this beautiful climber is known as a cultivated plant in Europe. Hitherto, no seeds have developed on our plants. The scent of the flowers is like that of the Pomme Melac, or Malacca Apple (Eugenia malaccensis).

SEEDLINGS "DAMPING OFF."

The "damping off" of seedling Cloves (Eugenia caryophylla) and Sweet Oranges (Citrus aurantium), oftentimes causes much loss and disappointment at the Botanic Garden, Grenada. In the case of Cloves, our supplies of self-sown seedlings come from a higher and cooler atmosphere than exists in the neighbourhood of the Botanic Garden; so the other hand, the air in our shaded open plant-sheds, where moisture is always more or less present, resembles to a great extent that of the lower mountains. Ferns, and other plants from the mountains which are subject to the same conditions, do well, yet the Clove does not. The plant has been tried in all sorts of positions, from dense shade to full exposure to the sun, yet in none has success resulted. I do not suppose that on an average we get 1 per cent. to grow. Again, with the Sweet Orange seedlings, unlike the Clove, these are raised from seeds sown in seed-boxes. Several dozen boxes, it may be, are sown, crowds of young plants come up, and yet perhaps fifty to eighty, or even more, in every hundred, die without any apparent cause. In some cases, side by side some boxes may be seen without one dead seedling, while others without exception have all withered away, though all may be from the same lot of seed, sown at the same time, and also in the same compost, so failure cannot be attributed to imperfectly-formed seeds. Why, therefore, should one box of seedlings be sound, and the next, although well filled with healthy young seedlings, shrivel up in a day and die off? The loss we sustain in this respect is both discouraging and serious. Can anyone reading this article suggest a remedy?

PIPER (POTHOMORPHE) PELTATUM, Linn.

A representative of that class of plants, known among horticulturists as "soft-wooded," and one that is known in the colony of Grenada as Chapeau d'Eau. Its leaves, dotted with innumerable white points, are large and circular in outline, 12 or more inches long, and about the same in breadth; they are covered with veins, and in colour are dark green above and milk-white beneath. The long leaf-stems are winged at the base and upwards for about 3 inches. When bruised, the whole plant emits a strong odour. The petiole is attached 2 to 4 inches from the base of the large, round, leafy portion, thus forming what is known as a peltate leaf. The lower or older main stems are roughened by little warty excrescences, which are present on the bark; whilst near the top of the plant the young stems are quite smooth, and covered with a glaucous bloom. The numerous tiny white flowers are produced upon erect, slender, catkin-like fingers, the common stem or peduncle to which several are attached being axillary. For a stove foliage-plant, this would be worth growing. Here it is found in shady and damp places, attaining a height of only a few feet. The native inhabitants use the leaves in cases of headache as a sort of bandage tied round their heads. W. E. Broadway, Grenada.

A NEW YELLOW-SPOTTED RICHARDIA.

The photograph mentioned in your issue of Jan. 23, in Colonial Notes, of a plant grown at Rhine Villas, Sea Point, Cape Colony, is doubtless that of the plant which was exhibited at the last show held in the grounds of the Cape Agricultural Society. I happened to visit this show, and noticed this plant, but instead of this being a new variety, it appeared to me

to be a well-grown plant of the true Richardia Elliotiana. Probably Mr. Ross may have seen other spotted-leaved varieties, and thought they were R. Elliotiana; but he has the true R. Elliotiana, and apparently he does not know it. The plant grown and exhibited by Mr. Ross was in every way a credit to him. J. B. R.

MARKETS.

COVENT GARDEN, APRIL 8.

(We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Thursday, by the kindness of several of the principal tradesmen, who revise the list, and who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general averages for the week preceding the date of our report. The prices depend upon the quality of the samples, the supply in the market, and the demand; and they may fluctuate, not only from day to day, but on several times in one day. Ed.)

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

s. d. s. d.	s. d. s. d.		
Anemones, per doz. bunches	1 6-2 6	Orchids:—	
Arunis, p. 12 bunches	3 0-6 0	Polyanthus, doz. hb.	6 0-12 0
Azalea, doz. sprays	0 6-0 9	Ondotoglossum	2 0-6 0
Bouvardias, per bn.	0 6-0 9	Crispium, 12 bn.	2 0-6 0
Carnations, pr. doz. blooms	1 0-3 0	Pasties, doz. bun.	2 0-4 0
Daffodils, various, doz. bunches	1 0-3 0	Petargoniums, scarlet	4 0-6 0
Earichis, per dozen	3 0-4 0	— per 12 sprays	0 6-0 9
Hyacinth, 12 sprays	1 0-2 0	Primroses, 12 bun.	0 6-1 0
(Dutch), boxes	1 6-4 0	Eyethrus, 12 bn.	2 0-4 0
Lilac, wh. (French), per bunch	3 0-4 0	Roses, Tea, per doz.	1 0-1 6
Lilium Hartsi, per doz. bunches	2 0-4 0	— chaly. per doz.	1 6-6 0
Lily of the Valley, dozen sprays	0 6-1 0	— red, per dozen	2 0-4 0
Madagascar Fern, per 12 bunches	4 0-8 0	Polyanthus, doz. hb.	1 6-4 0
Marguerites, per 12 bunches	2 0-4 0	— Safrano, p. doz.	1 0-2 0
Mignone, per doz. bunches	4 0-6 0	Tuberose, 12 blms.	1 0-1 6
Narcissus, various, per doz. bunches	1 6-3 0	Violets, per pair	0 4-0 9
— (English), per doz. bunches	0 6-1 0	Violets (Fr.) Parma	2 0-3 6
— (Eng.), per doz. bunches	0 6-1 0	— Car. bun.	1 0-2 0
— (Eng.), per doz. bunches	0 6-1 0	— (Eng.), per doz. bunches	0 6-1 0
— (Eng.), per doz. bunches	0 6-1 0	Wallflowers, doz. hb.	3 0-6 0

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

s. d. s. d.	s. d. s. d.		
Adiantum, per doz.	4 0-12 0	Ficus elastica, each	1 0-7 6
Aspidistra, per doz.	12 0-30 0	Foliage plants, per doz. hb.	12 0-36 0
— specimens, each	5 0-12 0	Genistas, per doz.	6 0-10 0
Azaleas, per doz.	18 0-30 0	Hyacinths, per doz.	6 0-12 0
Cinerarias, per doz.	6 0-10 0	Hydrangeas, per plant	2 0-3 0
Cyclamens, per doz.	9 0-12 0	Marguerites, p. doz.	6 0-12 0
Dracenas, each	1 0-7 6	Mignone, p. doz.	6 0-8 0
— various, p. doz.	12 0-24 0	Palm, var. etc.	2 0-10 0
Eriops, various, per doz.	9 0-15 0	— specimens, ea.	10 6-30 0
Evergreen shrubs, in variety, doz.	6 0-24 0	Pelargonium, per doz.	12 0-18 0
Ferns, small, doz.	1 0-2 0	— Sparag., per doz.	6 0-9 0
— various, doz.	5 0-12 0	— various, per doz.	6 0-9 0

ROOTS FOR THE GARDEN IN VARIETY coming very good.

FRUIT.—AVERAGE WHOLESALE PRICES.

s. d. s. d.	s. d. s. d.		
Apples, Tasmanian, per case, selected samples	14 0-16 0	Melons, Channel Islands, each	5 0-6 0
— per case, selected samples	7 0-8 6	Nuts, Cob., 100 lb.	60 0-7 0
Figs, per doz.	8 0-12 0	Pine-apples, St. Michaels, each	4 0-7 6
Grapes (new), Channel Islands, per lb.	3 6-4 6	— per lb.	5 0-6 0
— Belgium, per lb.	2 6-3 6	— puckerin boxes, per lb.	2 0-3 0
— Gros Colman, selected, p. lb.	4 6-5 0	— 2nds, per lb.	1 6-2 0

VEGETABLES.—AVERAGE WHOLESALE PRICES.

s. d. s. d.	s. d. s. d.		
Artichokes, Globe, per doz.	2 6-3 0	Onions, English, p. cwt.	5 6-6 0
— Chinese (Stachystrofolia), per lb.	0 2-0 0	Peas, ordinary (Channel Islands), per lb.	1 6-1 6
Asparagus, English, per bundle	4 0-5 0	— (Telephos) (Channel Islands), per lb.	2 0-2 0
Beans, French, p. lb.	10 0-10 0	Potatoes, New Kidneys, Channel Islands, per lb.	0 3-0 4
— Madeira Kidney, per bkt. of 8 to 10 lb.	2 6-3 6	Radishes, Chancelled, per dozen	1 0-1 0
Cauliflowers, Crown, per crate	10 0-12 0	Salad, small, per doz. punnets	1 6-1 6
Cucumbers, home-grown, select, per doz.	3 0-4 0	Sea Kale, per punnet	3 0-4 0
— 2nds, per dozen	2 0-3 0	— weight	0 6-1 0
Horseradish, English, per bundle	2 6-3 0	Tomatoes, Canary Islands, per lb.	4 0-5 0
— Foreign, per bundle	1 6-1 6	— about 12 lb.	4 0-5 0
Mint, per bunch	0 6-1 0	Tomatoes (Worthing), per lb.	1 2-1 6
Mushrooms (Indoor) per lb.	0 8-0 9		

POTATOES.

Trade steady, supplies fully equal to the demand. Dumbar Maincrop, 75s. to 85s.; do. Saxons, 75s. to 75s.; Lincoln Saxons, 40s. to 60s.; do. Midcups, 40s. to 60s.; Glantz, 40s. to 55s. John Bath, Wellington Street, Covent Garden.

SEEDS.

LONDON: April 7.—Messrs. John Shaw & Sons, Seed Merchants, of Great Malton Pond, Hove, London, S.E., write that there is now an improved sowing demand for Grass, Clover, and other field seeds, under the influence of which stocks are being reduced to moderate limits. The orders which come to hand are executed at the low rates characteristic of the present season. Lucerne, Sunflower, and Timothy realise former terms. Tares move off slowly, and are cheaper. For Mustard and Rape-seed the market is firm. There is no change this week in either Canary or Hemp seed. Blue Peas and Haricot Beans are in better request. Linseed in weaker. Scarlet and White Runner Beans are obtainable at tempting rates.



[The term "accumulated temperature" indicates the aggregate amount, as well as the duration, of degrees of temperature above or below 42° Fahr. for the period named; and this amount is expressed in Day-degrees—a "Day-degree" signifying 1° continued for twenty-four hours, or any other number of degrees for an inversely proportional number of hours.]

DISTRICTS.	TEMPERATURE.				RAINFALL.	WIND.	WIND SUN.				
	ACCUMULATED.				INCHES.	DIR.	HOURS.				
Days (4) above 42° (the mean for the week ending April 3.)	Days (4) below 42° for the week.	Days (4) above 42° difference from Mean since January 3, 1897.	Days (4) below 42° difference from Mean since January 3, 1897.	10ths of an Inch.	Ins.	Ins.	Ins.				
0	7	6	55	8	6	4	65	11	1	45	19
1	7	0	54	14	2	0	57	6	7	60	40
2	5	3	35	34	—	—	59	6	4	39	23
3	3	16	32	34	44	104	1	57	7	1	29
4	3	14	32	36	—	94	1	54	7	9	31
5	1	23	12	47	140	3	52	9	3	31	24
6	6	4	40	16	16	16	58	11	4	1	22
7	5	6	26	31	66	1	61	8	0	40	21
8	2	27	14	43	110	6	65	12	1	36	25
9	6	8	37	9	0	0	66	9	6	33	24
10	5	16	27	30	23	3	61	11	7	36	27
0	0	aver	38	0	106	7	71	11	4	11	27

The districts indicated by number in the first column are the following:—

- 0, Scotland, N. Principal Wheat-producing Districts—1, Scotland, E.; 2, England, N.E.; 3, England, E.; 4, Midland Counties; 5, England, including London, S.; 6, Principal Grazing, &c., Districts—6, Scotland, W.; 7, England, N.W.; 8, England, S.W.; 9, Ireland, N.; 10, Ireland, S.; 11, Channel Islands.

THE PAST WEEK.

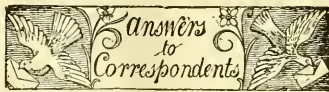
The following summary record of the weather throughout the British Islands for the week ending April 3, is furnished from the Meteorological Office:—

The weather during this period was very changeable, fine and bright intervals alternating with considerable falls of rain, sleet, or wet snow.

The temperature just equalled the mean in the 'Channel Islands,' and was only 1° below it in 'England, S.,' in the other districts, however, the deficit was greater, that in 'England, N.W. and N.E.' being 5°, that over Ireland 5° or 6°, while that over Scotland ranged from 6° to 7°. The highest of the maxima were recorded on March 28, when the thermometer rose to 58° in 'England, E.,' and 57° in several of the other English districts and in the 'Channel Islands,' to 49° in 'Scotland, E.,' and 47° in 'Scotland, N.' The lowest of the minima, which were registered on March 30, were very low for the time of year. They ranged from 16° in 'Scotland, E.,' and 18° in 'Scotland, N.,' to 23° in 'Scotland, W.,' 24° over Ireland, and to 26° in 'England, S.' In the 'Channel Islands' the thermometer did not fall below 26°.

The rainfall was greatly in excess of the mean in 'England, S.W.' and the 'Channel Islands,' and rather considerably so in 'England, S.,' 'England, N.E.,' and 'Ireland, S.' In 'Scotland, E.' the fall was equal to the normal, while in all the other districts it was deficient.

The bright sunshine exceeded the mean value in Scotland and the northern parts of England and Ireland, but was somewhat deficient in most other parts of the kingdom. The percentage of the possible duration ranged from 45 in 'Scotland, N.,' and 41 in 'Scotland, W.,' and the 'Channel Islands,' to 31 in the 'Midland Counties' and 'England, S.,' and 29 in 'England, E.'



A SNOWER BOUQUET: J. M. This is an arrangement of flowers, foliage, and ribbon, secured in a bouquet-holder of satin, paper, &c., which, instead of being circular in form, streams over, as it were, on one side, like liquid poured from a pitcher. The material of the bouquet has to be "wired," and is lightly bound up, so that it is readily grasped. Tall stands of stont brass wire are sold at some florists, to enable such bouquets to be placed on a table.

DEVONIENSIS ROSE: U. M. The plant may be dead; most Roses having, under ordinary conditions, broken into wood.

FIGS: A Subscriber, Worskop. The Figs sent are not suffering from any organic disease, but the cause of their appearance was external, and, as it seems to us, was produced by some sudden chill or change of temperature. M. C. C. [The check alluded to is the cause of imperfect fertilisation, hence the rotting of the fruits from the apex downwards. As the season advances so will the malady disappear.]

FLOWERS FOR WEDDING IN SEPTEMBER: J. M. We may name the following: Tuberoses, retarded Lily of the Valley, and Lilium longiflorum; Roman Hyacinths, some species of Jasmine, as Sambac; Tea Roses, German Asters, Early Chrysanthemums, single and double-flowered Pteris-gonioms, double-flowered Petunias, &c.

FUNGUS IN MELON-BED: H. K. The material sent from your Melon-bed is a fungoid substance which grows over all kinds of dead vegetable matter, tan, loam, &c., and is called Fulguria varians. This is one of those curious organisms, the Myxomycetes, which some people say is as such an animal as a fungus. You must get away as much as you can of the surface-soil in your beds, and replace it with fresh, and possibly you may get rid of the pest; but we are doubtful now that it is so firmly established, and the millions of spores are everywhere. M. C. C.

INSECTS: J. L. The flies sent belong to the genus Bibio, nearly related to "daddies," although so different in appearance. The grubs are very much alike, and have the same habits, hence there was apparently an error in the previous identification. They are said to be highly injurious, especially to roots of grass. It is very probable that in your case they were introduced with manure. R. McL.

NAMES OF PLANTS: Correspondents not answered in this issue are requested to be so good as to consult the following number.—W. G. Dendrobium fimbriatum.

—W. S. S. There is a crested variety known as Adiantum cuneatum grandiceps. It is similar to yours so far as we can judge by the fronds sent.—J. M. B. Cattleya Percivaliana, but it usually bears more purple colour on the front of the lip.—T. B. K. A very good variety of Dendrobium nobile. The large single flower is Bifrenaria Harrisonii, more commonly known in gardens as Maxillaria Harrisonii.—E. W. North Hales. Not Cypripedium hirsutissimum, but C. Bosxlii.—J. R. Your Dendrobium Wardianum is of a very distinct character if it remains constant. The others are good flowers of their kind. J. F. A. Vanda Amesiana; B. Miltonia flavescens; C. Cypripodium punctatum, a species very remarkable for the showiness of its floral bracts. H. C. B. A very fine Spathoglottis grandiflora. The fresh-imported Dendrobium nobile is large, and very brightly coloured.—Corypodium. Pinus pinaster. G. C. Many thanks for the specimens. We believe they are all correctly named, except that T. gigantea, is the true original T. plicata. In gardens the name gigantea may be conveniently retained.—A. B. Yours is the semi-double purple form of Vinca minor.—T. P. North Devon. Lælia Boottiana, more commonly known in gardens as Cattleya lobata.—Succulent. Cereus flagelliformis, figured in the Botanical Magazine, vol. i, t. 17, as Cactus flagelliformis.—J. W. McL. The Cyclon form of Cymbidium aloifolium, which was known as C. bicolor. Your Beech shoot is affected, which, for want of a better name, we call the silver-leaf disease. It is probably caused by a fungus, and is very destructive; cut all the affected shoots away and burn them.—Win. W. The white Orchid is

Dendrobium barbatulum; and the other, Cirrhopetalum fimbriatum. The figs contained no perfect seeds.—Reader. 1, Odontoglossum odoratum; 2, Oncidium trizium; 3, Cattleya Trianae delicata; 4, Cattleya Trianae.—Tetmah. A, Selaginella denticulata; B, Selaginella viticulosa.—Wants to Know. 1, Adiantum cuneatum; 2, Adiantum capillare; 3, Adiantum gracillimum; 4, Triteletia uniflora.

PAINT LEAF: Gehangia. The leaves are affected with the fungus, Pestiabozzia phenicis, see Gardeners' Chronicle, p. 429, vol. xxiii, 1884; cut off and burn every affected leaf. There is no cure. Occasionally spray healthy plants with the Bordeaux Mixture.

PEACH LEAVES, DISCOLOURED AND CURLED: W. H. D. The so-called "silver-leaf" disease, the leaves have a silvery appearance, because the entire cuticle of the leaf is separated from the subjacent tissue, and is now being devoured by the aphides, which are so plentiful about them. There is no trace of fungus disease.

PRIMULA CORTUSOIDES: D. W. C. Mc. We were not aware that this species of Primula caused any irritation of the skin, although P. obconica has such effect on some persons.

SALTING ASPARAGUS BEDS: U. M. The quantity used should not exceed at one dressing 3 oz. to the square yard.

VINE FOLIAGE AND SHOOTS: W. H. The specimens sent indicate the presence of the Downy Mildew, Plasmopora viticola. See Gardeners' Chronicle, p. 75, July 21, 1894. The first thing to do is to cut off and burn every affected leaf without delay, as it is a fungus that soon spreads by means of its spores. If this be not done, the mycelium spreads from the leaves to the shoots, where it may possibly remain until the following year, only to break out anew. Spray with the following solution: 1 lb. of pure sulphate of copper, dissolved in 40 gallons of water, and apply in the evening. As a preventive, this mixture may be used a few times before the vines flower.

VINE BORDER: Amateur. The Vine being a sun-loving plant, it is in this country undesirable to sow or plant anything on the outside border of a vinery, unless it be just at the margin, where you might sow Mignonette, or other annual of dwarf growth, or plant Ten-week Stocks and German Asters.

VINES: Vitis. Kindly send us better specimens. We suspect it is the malady known as "Brown-rot," due to a slime fungus. See answer to W. H.

WEED AND MOSSY LAWN: U. M. Spud out the larger weeds, filling up the holes caused by the extraction of the roots with loam; then with a long-toothed iron rake free the turf of the moss, and apply the dressing you mention after sowing a little law-grass mixture on the bare spots. Wood-ashes may form one-fourth; lime, one-eighth; and the remainder loam; the lawn should be well rolled when not in a sticky condition. Slight dressing of wood-ashes may be afforded twice or thrice during the summer. Do not apply the salt. The lawn may require draining.

COMMUNICATIONS RECEIVED.—M. D.—J. W.—E. C.—Mrs. D.—H. T. (with many thanks).—J. A. L.—F. W. B., Costa Rica.—W. R.—H. E.—C. H. T.—E. D. T.—M. F.—J. M. T. (with many thanks).—O. T.—G. S.—H. W.—E. E.—J. L.—N. & G.—G.—O. A. H. K.—D. H. S.—H. T. (many thanks).—W. R.—H. E.—H. CANNELL.—C. A., Wiltis.—W. Morgan.—W. J.—W. F.—G. S.—D. T. F.—J. J. W.—Fairplay.—J. H. M.—D. H. S.—R. J.—A. B. W.—W. B. H.—C. H. P.—H. M.—S. Diplock.

SPECIMENS, PHOTOGRAPHS, &c. RECEIVED WITH THANKS.—W. H.—T. B. K.—D. T. F. (too obscure).—Sir E. L.—M. F. Foulkova.

CONTINUED LARGE INCREASE in the CIRCULATION OF THE "GARDENERS' CHRONICLE."

IMPORTANT TO ADVERTISERS.—The Publisher has the satisfaction of announcing that the circulation of the "Gardeners' Chronicle" has, since the reduction in the price of the paper, increased to the extent of more than 90 per cent., and that it continues to increase weekly.

Advertisers are reminded that the "Chronicle" circulates among COUNTRY GENTLEMEN, and ALL CLASSES of GARDENERS and GARDEN-LOVERS at home, that it has a specially large FOREIGN and COLONIAL CIRCULATION, and that it is preserved for reference in all the principal Libraries.



THE

Gardener's Chronicle.

SATURDAY, APRIL 17, 1897.

PLANT DISEASES.

UNTIL quite recently the task of convincing gardeners that plants could suffer from specific diseases was in most instances difficult; and if, in addition, it was suggested that such diseases could be cured, or, at least, checked in their course, the information was usually received with a smile or an outburst, depending on the temperament of the recipient. This condition of things is the result of the education received by most gardeners having been purely practical or imitative, consisting mainly in following those methods which past experience has proved to be most successful; at the same time adding to the general fund of knowledge, the outcome of personal experience and tact. The lack of a broader grasp of the fundamental laws which govern plant-life than can be acquired by the imitative method alone, is often very evident when a gardener is called upon to cultivate plants under different conditions than those to which he has been accustomed, and it is to be regretted that after the expenditure of years of diligent labour in acquiring a knowledge of the practical part of the subject, the gardener should be handicapped through lack of information relating to subjects which are, in reality, of the utmost importance in connection with plant-culture.

It is still sometimes urged that what is usually termed theoretical knowledge, is of no value to the practical gardener; nevertheless, it must be conceded that it is always a source of satisfaction to have a clear idea as to the reason why one mode of procedure yields more satisfactory results than another; and it can scarcely be doubted but that the time devoted to attending a few lectures and demonstrations bearing on the broad principles of vegetable physiology, would throw a new light on many points previously ill understood, and consequently lead to a better method of meeting in a practical manner, special requirements. Such practical lessons are given by the Essex County Council at Chelmsford, and should surely be carried out at Chiswick. The same may be said of plant-diseases; the various fungus parasites, many of which are terrible pests, have their own peculiar mode of life, their weak points also, which if understood on broad lines, would save the gardener many a bitter disappointment; but being ignorant of these laws, when a disease appears, an attempt is made to cope with it in a manner which, in many instances, rather favours than checks its spread, and the end is disastrous. "Prevention is better than cure," and the gardener whose knowledge enables him to anticipate a danger, based on

past experience in combating the same, is most likely to evade a calamity.

A book recently published* deals with those plant diseases caused by fungi, bacteria, slime-fungi, and Algae, and may be described as the best and most comprehensive work on the subject in the English language. It is a somewhat massive volume of nearly 600 pages, and contains 330 figures, illustrating the appearance of plants suffering from various diseases, and also the fungi causing such diseases. "Though it will be possible to identify most of the more important parasites by the aid of this book, we do not intend it to be so used as to replace the systematic works; we propose rather to add to the descriptions given in *Rabenhorst*, *Saccardo*, and similar works. This book is intended above all to be, in the terms of its title-page, an introduction, hence it seeks in a general way to give a summary of our knowledge, and to indicate the way to more detailed records." The above quotation from the author's preface indicates clearly the line of treatment adopted; it is essentially a student's book, but presupposes a considerable amount of special knowledge relating to the subject. Nevertheless, some of the introductory chapters may be carefully studied with advantage by those desirous of becoming acquainted with the practical part of the subject only. On the other hand, to the teacher or student of plant pathology, in the proper sense of the term, the book is simply indispensable.

The translator states that he has modified to some extent the original, so as to adapt the work to the requirements of English readers, and it would not have been a subject for regret if the modification had been extended to the exclusion of the numerous lists of fungi parasitic on weeds, which have no economic importance. Such strings of scientific names do not inspire confidence in the beginner, and their absence would be no loss to the advanced student.

Agaricus destruens, Brond., is given as a British species; this is probably a slip. On the other hand, *Sclerotinia Galanthi*, Ludw., a disease too well known with us, is not included as British. We learn that in Prussia the loss from grain-rust during the harvest of 1891 on the crops of Wheat, Rye, and Oats, amounted to the sum of £20,628,147 sterling, being nearly a third of the total value of the crops. Forest and horticultural produce suffers in equal proportion, hence the necessity for systematic and universal measures for combating such diseases, which through ignorance, are at the present day too frequently aided in carrying on the work of destruction.

We are perfectly conscious that it is inconsistent with our own views, and perilously near being an insult both to author and translator, to suggest a rule-of-thumb method, even as means to an end; but we are compelled, however reluctantly, to admit, that in this country, the methods for combating plant diseases are very imperfectly known, and we feel convinced that if a copy of chapter vi.—Preventive Combative Methods—could be made readily accessible to every person occupied in the cultivation of plants, it would facilitate the entrance of the thin edge of the wedge, and lead to a desire to become acquainted with the entire contents of the volumes of which it formed a part.

* *Diseases of Plants*, &c., by Dr. Karl Fröhner von Tabour. English edition by William G. Smith, Ph.D. (Longmans).

NEW OR NOTEWORTHY PLANTS.

PHAIUS × NORMAN (SANDERIANUS, Hort., × TUBERCULOSUS), new gard. hybr.

HOWEVER correctly it may be to place the *P. Sanderianus* imported some years ago by Messrs. Sander & Co. under either *P. grandifolius* or *P. Wallichii*, there is no doubt that as a garden plant it is far finer than any of the species before imported, and a marvellously strong grower. Its colours are bright, and very very much in the different specimens, and the elongated deflected front of the lip is a distinct feature by which to identify the plant, as a variety at least. It was these distinct characters which induced Mr. Norman C. Cookson, of Oakwood, to cross a fine variety of it with *P. tuberosus*, in order to attempt to produce an improvement on the favourite *P. × Cooksoni*. Four of the batch are now in flower, all of them rather lighter than *P. × Cooksoni*, which, however, the new variety resembles in a general way; the main differences being in the more prominent display of bright yellow lines radiating from the base of the lip, and the more elongated and lighter-coloured front to the same. The sepals and petals vary from cream-colour to pale pink, their surface being lined and tinged with yellowish-pink or copper colour. The base of the lip is reddish-purple, veined with bright yellow, and bearing three yellow keels up the centre; yellow on the under side. The front lobe is rose-coloured, blotched with purple, changing to nearly white at the tip! It is a very strong grower, and an acceptable showy garden plant, which will probably thrive in a warm greenhouse or conservatory, and, like *P. × Cooksoni*, be available for decoration in the dwelling-house. *James O'Brien*.

THE ATOLL OF FUNAFUTI.

AN expedition under the auspices of the Royal Society was made for the purpose of obtaining borings in the coral reefs of Funafuti. Mr. Hedley, of the Australian Museum, Sydney, accompanied the expedition, and succeeded in making rich collections in various departments. Mr. Hedley has favoured us with a copy of his general observations on the natural history of the Ellice group of islands, from which we extract the following:—

"The vegetable monarch of the Atoll world is the Coconut Palm (*Cocos nucifera*). Little tall individuals of which, rearing their plumes to a height of over 80 feet, give to the mariner his first landfall. Every available rod of dry land is planted with Coconuts; one tiny islet, a mere shingle bank, so swept with spray that *Lobelia* are the only other vegetable life, yet grows three poor stunted and battered Palms. It is to be emphasised that all Coconuts are planted; the idea of a wild Palm being as strange in Funafuti as that of a wild Peach might be in England. Gill, in describing the primeval forest of the uninhabited island of Nassau in 1862, alludes to but a single Coconut tree among the indigenous vegetation." I doubt whether, despite popular opinion to the contrary, a wild Coconut Palm, is to be found throughout the breadth of the Pacific. Certainly it is most rare, again contrary to popular theory, for a drifted Coconut thrown upon the beach by winds and waves to produce a tree.†

† Palms devoted to the manufacture of toddy are readily distinguished by having step-notches cut in their trunks.

* Gill, *Journal from the Pacific*, 1855, p. 30.

† From eye witnesses I have heard of several wild Coconut Palms on Faciog Island, Queensland, and again of one at Emu Park, Queensland. But, if the popular idea were correct, the Queensland beaches should have presented many hundred miles of Coconut groves to their earliest explorers, receiving, as I can testify they do, abundance of drifted nuts, and fulfilling every requirement of soil and climate. As *Jackes* says: "The entire absence of these trees from every part of Australia is a most striking fact, since it is, being the only country in the world so much of which lies within the tropics, in which they have never been found." (*Vol. 'Fly' 1*, 1847, p. 132.) I have been told by Queensland aborigines that they always tore up and ate any sprouting nuts they might find; but even this scarcely accounts for the remarkable absence of the Coconut Palm from Queensland. *Jackes's* remarks on the germination of stranded Coconut nuts (*Nature*, xl., p. 492), will repay perusal; also *Dana's*, in *Coral and Coral Islands*, 1872, p. 151. Where the original home of this Palm was, has been discussed at length by *Seemann*, in the *Flora Floridensis*, and by *De Coudolle*. So intimately is this Palm now associated with our life that it is difficult to imagine an Atoll before its introduction." *Origin of Cultivated Plants*, 1884, p. 429.

Every month the Palm puts forth a budding-spathe. In toddy Palms this is not permitted to develop into flower and fruit, but on its first appearance is lashed round with twine, "mailed" in seafaring language, from the base to the apex. The peduncle of the spathe is scraped and slightly split, to allow it to bend more freely. Then the spathe is bent downwards gradually by tying down the tip for two or three days, the cord being shortened at intervals, till the spathe has acquired the proper inclination. Three or four inches are cut off with a knife from the tip, to which a little spout or gutter of lead is attached. This prevents the drip of the sap into an empty Cocoa-nut shell hung from the spathe. Twice a day a lad ascends the tree, unbands the tip, shaves a little off it with his knife to make the sap run freer, rebands it, and exchanges the full shell for an empty one. Several spathe in one Palm are in operation simultaneously.

"The cultivation of the Cocoa nut is confined to the simple operation of placing a sprouting Nut where it is to grow, of clearing the shrubs and vines from around it, and of gathering the produce. The work of collecting and husking the Nuts devolves solely upon the men. For climbing the Palms a stout rope loop, "kafunga," is twisted into a figure of eight; into this each foot is thrust as far as the instep. Placing his hands around the stem, the man leans on to the trunk, resting his unoccupied feet on either side of it. Raising his hands to a higher grasp, he makes another leap, and ascends the tree by bounds of a couple of feet or so. Arrived at the sum-it, he plucks from his belt a short, notched stick and attached cord, "konteki." Applying the stick against the Palm-stem, like a ship's cross-tree against her mast, he winds the rope half round the trunk, over the notch on the stick, back round the tree, and over the other notched end. Repeating this twice or thrice, the stick is securely hitched to the trunk, and the native standing upon the cross-tree may conveniently do his work. A nut is gathered by seizing the apex with the fingers, and twisting it round till the twisted stalk breaks, when the nut is allowed to drop to the ground.

"Temporary huts are thatched with Cocoa-nut, but Pandanus replaces it in permanent residences." A leaning Palm is used to collect rain-water, which, tricking down the stem, is turned by a wisp of leaves, and caught in a wooden trough.

ORCHID NOTES AND GLEANINGS.

LÆLIA × LATONA.

A SPIKE of this hybrid nearly a foot in length, and bearing three very beautiful flowers, has been received from T. W. Thornton, Esq., Brockhall, Wreton, who raised the plant which produced it from seed obtained by crossing *Lælia cineraria* with *L. purpurata*, the seed having been sown in November, 1889. The same cross was first flowered by Messrs. Jas. Veitch & Sons, who exhibited it under the above name in 1892. Mr. Thornton's variety seems larger in the flower, but this may arise from superior strength in the plant. It also has the labellum almost entirely of a dark claret-purple, and without the lighter colour at the tip as in the original. The sepals and petals are of a clear reddish Indian-yellow, and the whole flower very attractive.

CYPRIPEDIUM NANSSEN (SELLIGERUM MAJUS × MORGANIE), new gard. hybrid.

In this fine hybrid the ancestry is *C. superbiens* and *C. Stenei* on the one side, and *C. barbatum* and *C. philippinense* on the other; and so four species of different geographical ranges have been concerned in its production. To those who know hybrid *Cypripedium*, it will be best described as bearing much resemblance to both the fine *C. × Youngianum superbum* (*superbiens × philippinense*) and to *C. × Denianium* (*selligerum × superbiens*), illustrated in *Lindley's*, vol. x., p. 13. The leaves are bright green with a darker green veining. Scape dull purple, two-flowered. The flowers have the upper sepal 2 inches long and nearly 2 inches wide, white, with a green tinge at the base, from which about twenty purple lines radiate. Lower sepals small, r., and with green lines. Petals 5 inches long, 1½ inch broad, whitish, with numerous purple spots, the edges ciliate. Lip large, slightly grooved down the front, greenish, tinged with pale purple. Staminate large, ciliate, cream-coloured, veined with green. *J. O. E.*

* "The thatch of Atepa's house (in Nanomania) is merely the leaf of the Palm-plant, which is very peculiar to Atepa; while the thatches are well covered with the leaf of *Pandanus odoratissimus*, the finest thatch in the world. We suggested to a chief that the chief's dwelling might have a better thatch. He replied, 'The king's house is thatched with Cocoa-nut leaves, not with *Pandanus*, because he is but mortal.' The same feeling existed in Mangia with reference to this celebrated thatch tree."—Gill, *Journal from the Pacific*, 18 5, p. 28.

ORCHIDS AT OAKWOOD, WYLLAM.

THE extensive and interesting collection of hybrid Orchids raised by Norman C. Cookson, Esq., and his gardener, Mr. Wm. Murray, is continually affording fresh examples of fine things from well-considered crosses. Here are no haphazard ventures, hence the uniform excellence of the novelties raised. As compared with results obtained by other raisers who cross anything and everything, at Oakwood but few seed-pods are saved, and with the raising of the seeds but little difficulty is experienced, while the progeny are invariably good and desirable additions to garden Orchids. The main difficulty experienced is in getting the seeds to germinate in exactly the place in which they were sown, and where the record-label, corresponding with the pedigree-book, appears. Sometimes it is found that the plants appearing under a certain record cannot possibly be true, and consequently they must have been dipped up from the water-tank, or transported in some other way; and, being more prepared for germination than the fresh-sown seeds recorded, have usurped their place—for the time being at least. At other times a thing will appear which, bearing evidence of its parentage on its face, is found to be of a cross carefully sown in quite another place.

The Dendrobium-house has for a considerable period of time been a charming sight, filled from end to end with the beautiful flowers of plants which were one and all raised on the place. On one side are plants of the bright carmine-rose-tinted *Dendrobium × Harold* (*Linawianum × Findlayianum*); and on the other a fewer number of *D. × Sibyl* (*Linawianum × bigibulum*). There is a similarity in the flowers of these two beautiful crosses, although their habit of growth is different. Their bright and attractive flowers have few rivals among *Dendrobiums*, either species or hybrids.

Suspended overhead were several of each of two lovely crosses of *D. luteolum*, viz. *D. × Astrea* (*luteolum × crassinode*), with fine pale sulphur-yellow flowers, with the tips of the segments rose-coloured; and *D. × Bryan* (*luteolum × Wardianum*), with handsome flowers of the same creamy-yellow tint as *D. luteolum*, but much larger. In these two crosses, as in so many garden hybrids, the bad habit and difficult growth of one of the parents (in these cases *D. luteolum*) is done away with, and better flowers, more profusely produced, on plants easy to manage, are secured, which in itself is a sufficient plea for the pursuit of hybridisation. Of the white or nearly white varieties, *D. × Murrayi* (*nobile × albe-anguineum*) and *D. × Kenneth* (*MacCarthy × Bensonie*) (illustrated in the *Gardeners' Chronicle*, February 27, 1897, p. 135) are two of the best; though the several distinct forms of the *D. × Cassiope* class; and of the white-flowered second crosses of *D. × Aineorthianum*, both of which are represented in quantity, are good and profuse-flowering. A large batch of the bright rose-pink-flowered *Dendrobium × Dulce* (*aurum × Linawianum*) exhibits the free-flowering character of this cross. It was noted among the seedlings in this case there is some variation in tint, and one has flowers which are stippled in a singular manner. Others observed in more or less quantity were *D. × Oweianum* (*Linawianum × Wardianum giganteum*), *D. × Venus* (*Falconeri × nobile*), a great beauty, and continuous bloomer; *D. × Doris* (*Leachianum × moniforme*), one of the best of the Cassiope strain; *D. × Corningianum* (*nobile × lituiforme*); *D. × Wigacie* (*pleudissimum* and *D. × Aspasia*, var., a very fine form; both of the last-named having been acquired from Messrs. Veitch & Sons, Ltd.

The central portion of the stage occupying the middle of the house was filled with a large number of fine plants of varieties of *Dendrobium nobile* raised by Mr. Cookson in order to test the effect of crossing a good typical *D. nobile* with the trilobelloid *D. n. Cooksoni*. The result has been the production of a very fine and varied series of *D. nobile*, which as regards the greater number, are like the type in shape, but in some cases larger, and possessing colours

equalling those of *D. n. nobile*. One variety, *D. n. picturatum*, has very showy bizarre or variegated flowers; and another (not raised in the batch), named *D. n. Aroclianum*, has a repetition of the colouring of the labellum on the two lower sepals, instead of on the petals as in *D. n. Cooksoni*. Many other *Dendrobium* crosses were in bloom in the house, the only species noted being *D. strobilaceum*, which is destined for crossing.

In another house the show principally consists of numerous plants of the best forms of *Phaius × Cooksoni* (*Wallichi × tuberculatus*), the finest specimen of which, a plant bearing eighteen flower-spikes, having been recently exhibited at the Royal Horticultural Society, when it received an award of a Silver-gilt Flora Medal. In Mr. Cookson's opinion, it is one of his best crosses, but its full value as a garden plant has yet to be appreciated, when the beauty of the flowers, the ease with which it can be grown, and its durability are known. Mr. Cookson has the Orchids when in bloom in his drawing-room for a period of six weeks. Sojourn, under what must be regarded as injurious conditions, does not appear to affect the health of the plants in the least. In the same house was a batch of another cross between the fine *Phaius Sanderianus*, Hort., and *P. tuberculatus*; in its general characteristics it resembles *P. × Cooksoni*, except that the lip is longer in front, and the interior bears a number of clear yellow lines. Here, too, is the old plant of *P. tuberculatus*, which has been in use every year, and is still in flower; and although the habit is not nearly so robust as its offspring, the plant continues healthy.

In one of the Cattleya-houses the centre stage has the remains of a good show of *Cattleya Triandris*, and the similarity of the *C. Schrodera*. The side stages are occupied by a very great number of hybrids of *Lælia* and *Cattleya*, *Epidendrum*, and many strange crosses, on the appearance of whose flowers it is interesting to speculate, although when the flowers are produced some of them will probably differ totally from what they were expected to be.

In one house *Lælia* aneeps, principally varieties of whites, had bloomed well, and a large panful of *Cologyne cristata alba* must have been very fine. Here a fine specimen of *Cologyne ocellata maxima* was in bloom; and the handsome *C. pandurata* and others were sending up flower-spikes. On the centre stage were plants of *Anthurium Laligi*, with pure white spathe, and *A. Burfordense*, the brightest of the dark scarlet varieties. Among the *Cypripedium* two more plants of the home-raised *C. Lawrenceanum Hycnum*, illustrated in the *Gardeners' Chronicle*, Jan. 16, 1897, p. 37, are flowering, and prove to be equal to the one figured. *C. × Bryan* (*philippinense × Argus*) is sending forth its graceful spikes of flowers, which latter, in some respects, resemble *C. × Morganie*, excepting for the large white upper sepal, closely striped with emerald-green. Here, too, was blooming for the first time a grand cross between *C. × selligerum majus* and *C. × Morganie*, which is an improvement on *C. × Youngianum superbum*, hitherto thought to be the best of its class.

Other fine plants noted in flower or bud were *C. callosum Sandersi*, a plant of which was much admired at the Temple Show when exhibited for the first time by Messrs. F. Sander & Co., and has increased in favour ever since; the fine *C. × Juno* (*callosum × Fairieanum*), an advance on the kindred *C. × vexillarium*; *C. × Pitecherianum*; and a number of others. In studying the well-being of his plants, nothing that is deemed advisable to be carried out is too trifling, and no point likely to be of use is too studied to be considered.

The occupants of the cool-houses were in grand health, and as affording evidence of this was the presence of a small stock of each of a number of very finely-blotched varieties of *Odontoglossum crispum*, which have been worked up in each case from a single plant. Thus, of the famous *O. crispum Cooksoni* and some other varieties as rare, there are now six or seven plants of each. The raising of hybrid *Odontoglossum* is being pursued, and in due time it is not too much to hope that the recently-exhibited *O. × Halli-crispum* will be followed by others, though the

work of crossing *Odontoglossums* is less easy or sure than in other genera.

In the cool-house there were in flower a number of plants of *O. crispum*, *O. Halli*, *O. Pescatorei*, *O. Wilckeanum*, and some showy *Masdevallae*.

PADDOCKHURST.

This is a place of which few of our readers are likely to have any present knowledge, but it is one about which they may hear much in the future. Paddockhurst is a Sussex estate, and its location is about four miles from Three Bridges Station on the London, Brighton, & South Coast Railway. Crawley and East Grinstead are but little further distant in other directions.

Sir Weetman Dickinson Pearson, who a short time since acquired the estate of about 3000 acres by purchase, had no sooner entered upon possession than he determined to build extensive ranges of glass-houses, and to enlarge the pleasure-grounds and flower-garden, with a view to obtaining in them what horticultural features and effects the conditions of their site would allow. Extensive work to this end has been carried out under the management of the eminent landscape gardener, Mr. H. E. Milner.

THE GLASS STRUCTURE, &c.,

or, at least, such part of them as is not being done by the estate mechanics, are the work of Messrs. Mackenzie & Monour. These have evidently been built to endure; the materials used in all of them are of the best, and the woodwork throughout is of Teak.

The value of this wood for all such purposes consists in its durability, which has no comparison whatever with any woods that have been commonly employed in the erection of green-houses. On the other hand, its appearance is decidedly different from Pitch Pine or Deal when these are painted, and we must add when painted as often as necessary. The Teak has a stained, reddish appearance that is not quite to the taste of some persons, who are accustomed to white-painted woodwork.

Every house upon the place will be new, and all of them are nearing completion, except in the matters of interior furnishing and the approaches. There are four ranges of span roofed plant-houses about 12 feet wide and 8 feet high. Each range is 114 feet long, and is divided into four divisions, so that these alone represent about 450 feet of glass, and it is all of the most convenient description for the growth of plants of moderate size, or for Cucumber, Tomato, and Melon growing. If each of these divisions is devoted to the culture of plants of one affinity only, a very important aid to good cultivation will be secured at the outset. It is intended, we believe, to utilise one range in its entirety for the growth of Orchids.

There is an excellent Orchard-house about 120 feet long, 24 feet wide, and perhaps 11 feet high. The roof has three ridges and furrows. A partition divides the house into two divisions, and one part may therefore be used for slight forcing. Various fruit-trees for plunging or planting in this structure arrived at the time of our visit.

Rather nearer to the house is another range of glass 300 feet in length, most of it being three-quarter span. Here there are six vinerias, a stove, a green-house, and two plant-houses, one at either end. In the centre a kind of connecting link will be in the shape of a dome of moderate height, to be used as a Rose-house.

The conservatory has been built adjacent to the new wing of the dwelling-house, upon the eastern side, and is about 90 feet long, 35 feet wide, and of considerable height. The disadvantages of this structure, owing to its being insufficiently provided with light, we are afraid will be considerable. If we may judge it in the half-finished state it at present bears, it is unlikely that any but shade-loving plants will continue to thrive in it for any length of time, and thus it will entail a continuous drain upon houses

more favourable to plant-growth. However, a free use of marble and other reflective mediums is intended, and when finished the building may appear more light than when we viewed it.

The very considerable extent of glass above enumerated will be supplemented by about 450 feet of Teak-pits.

Before disposing of the glass structures, it may be added that Mr. F. Capp, the gardener, is actively engaged in obtaining collections of plants for furnishing them. Even now, when the work engaged in necessitates much inconvenience to plant-growing, there is a praiseworthy display of bloom from a good strain of *Cinerarias* and other species of spring-flowering plants.

A wing has been added to the rather plain-looking dwelling-house. A residence for the gardener will be commenced shortly, and a convenient and well-appointed cottage for the young gardeners is in course of construction; besides which there are several necessary offices, storerooms, and such places to be built. The imposing-looking stables are inconveniently near to the dwelling-house. Excellent arrangements exist for illuminating the house and grounds with the electric light.

PLEASURE-GROUNDS, &c.

Turning our attention to the pleasure grounds, there will be about 45 acres to be kept, if we include the flower-garden and the kitchen-garden yet to be made. The house stands on a slope, being neither at the summit nor at the base, and faces due south. The entrance from the west has already been altered and improved, and a new entrance will be made upon the eastern side of the estate, and a drive from this point will lead up to the dwelling-house, passing through an avenue of Chestnut trees. The more attractive portions of the pleasure-grounds and flower-garden are destined to be upon the east side of the house, and to the south of it. Unfortunately, as we think, there will be little "kept" ground immediately in front of the residence—indeed, only a few yards.

One of the natural advantages of the place is a semi-wild spot under trees, a hundred yards distant, directly south of the dwelling, where there are several small watercourses surrounded by high banks, and percolating through very uneven ground. Many rustic bridges have been erected at suitable points here, and there is a pleasant waterfall, quite strong enough as we saw it, but the supply of water may become much lessened in summer. Primroses, hails, and other suitable plants, have been planted by Mr. Capp, and he will no doubt make the most of the natural advantages of this spot. *Skimmia japonica*, scarlet Oaks, *Butcher's Broom*, *Berberis*, and *Rhododendrons*, will furnish the banks on either side of the streams. Intervening between this attractive wilderness and the front of the house is some grazing-land, so that the cattle may stray close up to the windows, consequently, the house is reached by paths to this right or left, which enclose the grazing-land within a more or less perfect circle. We have already said that the flower-garden is being formed on the slope to the east of the house, but before this is reached, there is a little border contiguous to the conservatory on a kind of terrace. It has been cut up with a pretty design, and many small beds, but the effect would have been better had there been more space available. As this was not possible, however, a more simple design would have been suitable.

We can say but little upon the flower garden, as it was far from completion; but its general character, and several details in its arrangement, are certainly praiseworthy and most artistic. There are a few incongruities we admit, as for instance the four *Yew* trees, clipped into some resemblance to a peacock, one placed at each corner of a piece of beautiful greenward adjoining an Elizabethan garden, where informality exists to the extent that there are beds of choice varieties of desert fruits that visitors to the flower-garden may be able to gather some refreshing fruits. It is satisfactory to know that these tortured trees had to be imported from Holland. In close proximity, a maze is to be con-

structed, consisting of *Yews* 4 or 5 feet high; and there will be two fountains, one upon this, and a second upon the other side of the house. The sides of one of the broad paths or drives are lined on either side with iron arches about 8 feet high, running in the same direction as the drive. *Malus floribunda* and *M. atrosanguinea* have been planted at each arch, and when well covered, these arches or chains will provide an unusual feature. We are glad to say that a good number of *Roses* have been planted, and it is evidently intended to create a remarkable display with *Turner's Crimson Rambler*.

A new kitchen garden of about 3 acres is to be formed. Altogether, the place is a very interesting one, and we shall have pleasure in taking an opportunity to visit the gardens at a subsequent time, when we may be in a position to place before our readers some notes upon the effect of the work we now allude to. Sir W. Pearson, who is an eminent engineer, may be congratulated upon the horticultural enterprise he has shown, and we hope he will obtain the amount of pleasure from his garden that his efforts deserve.

METHODS OF PROPAGATION.

(Continued from p. 215.)

ORNAMENTAL AND TIMBER TREES FROM SEED.—The Hornbeam, called in some counties the Buck Beech, rarely attains to any great size. There is a fine pollarded plantation at Mersham-le-Hatch, in East Kent. These pollards are cut about every seven or ten years, when they furnish a large quantity of good cord-wood and brush-faggots, the latter being used for brick-burning. It is also a most useful hedge-plant, and may be used alternately with *Quick* (*White-thorn*). It can be raised from its seed, which are like small Chestnuts. These separate freely from their husks in the autumn, and may then be collected and sown at once, or in the following February or March.

The Spanish Chestnut, though not an indigenous tree, ripens its fruits in hot dry summers. The seed from trees at home is preferred by foresters to imported Spanish nuts, for two reasons; they are smaller, and consequently more numerous go to the bushel; and secondly, they will produce hardier seedlings. The nuts should be spread thinly on a dry floor, and frequently moved as well, and covered up during frosty weather. In addition to other feathered and furred enemies that feed on their tree-seeds, we have in this case to guard against the vole, erroneously called the water-rat, as well as from rats properly, who will work along the rows, and devour the just sprouting nuts, if not checked by trapping. A good plan is to pour a little common paraffin-oil into the bag containing the Chestnuts, and to give it a shake, so that every nut gets a little on it. If this be done the night before sowing, every nut will be flavoured with the strong-smelling oil, which will render them distasteful to both bird and quadruped.

In Kent and Sussex, large quantities of Chestnut-plants are raised annually to replenish woods and coppices, as Chestnut-poles are in great demand as Hop-poles, and to split to make rails for fences and other purposes. Chestnut-plants should never be grown in low damp ground, as the late frosts will kill back the young growth in the spring, when, even if cut to one lead—a tedious and expensive process—the plants seldom make clean straight plants. The best soil for them is a stiff sandy loam, enriched with yard-manure, so as to insure a stout and rapid growth. The importance of the Chestnut for woods and plantations may be inferred, when it is known that such, compared with mixed underwood, realises double the price per acre.

The common Hazel is also used, but only in districts where the soil is thin. Hazel nuts are sown in drills, and in using them one has to guard against the elegant and active squirrel.

The Horse Chestnut (*Æsculus*) is generally raised from the nuts, but is almost exclusively used as an

ornamental tree. A few seedlings should be raised for stocks to bud the scarlet-flowered and other ornamental varieties on, according to directions previously given in these columns.

The same may be said of the Walnut, which has valuable timber, is useful as a fruit-tree, and is also ornamental. While I am mentioning this I must not forget its first cousin, the Hickory, which in situations where it will thrive, makes an exceedingly handsome tree. There are some grand examples at Lees Court, near Faversham, the seat of Lord Soudes.

A tree not well known, but worthy a place in the arboretum, is the Planera, which is also raised from its seeds, or nuts. Both the Planes now so much in demand for street decoration in our cities and towns, and used with such happy effect in beautifying our noble Thames Embankment, are sometimes raised from foreign seed, but in English nurseries are propagated by layers from stools: though it is not difficult to raise the American variety from cuttings of the young wood, taken with a beel, and kept close in a cold pit.

Lastly, the Cherry, both *Cerasus sylvestris* and *C. vulgaris*, are raised from their stones, sown in drills, and transplanted when two or three years old to the nursery quarters, in which they are to be worked, i.e., budded or grafted. The different Plums used also in the trade for stocks, and considered in former papers, are raised from their stones, sown in drills; but patience will be found indispensable with all stone fruits, as it is not till the hard stone has partially decayed that the kernel can germinate.

The Wych or Scotch Elm is generally increased by seed, and is the variety generally used to graft on the English and other kinds; but it is not a very quick stock.

(To be continued.)

VIOLETS.

THE Violets, so common and so welcome at this season, are all descendants of the common *Viola odorata*. It is not suggested that any of the varieties are the result of hybridisation. The flowers are irregular in form, provided with a spur, and specially adapted for fertilisation by insects. The anthers form, as in other species, a sort of tube around the style. The style itself ends in a hook. When an insect visits the flower in search of the honey in the spur, it tilts against the hook of the style, and presses it against the anthers, which thus set free their contents, and besprinkle the body of the insect with pollen. On alighting on another flower the pollen comes into contact with the hooked stigma, upon which the pollen is wiped off, and its fertilisation ensured.

But although cross-fertilisation is thus provided for, close or self-fertilisation often occurs. There are in Violets numerous inconspicuous flowers with green petals, which are produced after the coloured flowers, offer no attractions to insects, do not open, and are hence called "cleistogamous." The pollen of such flowers fertilises the ovules of the same flower. If, on the one hand, cross-fertilisation be a means of securing variation, close fertilisation, on the other, would appear to be a device for ensuring stability of characters and absence of variation. The raiser on the look out for novelties would, of course, eschew the seed produced by the cleistogamous flowers, though it is produced so freely, and prefer that ripened in the insect-fertilised flower. Vochting, as cited in Willis' *Manual and Dictionary of Flowering Plants and Ferns*, says that these cleistogamous flowers are specially formed in the shade. We do not know with what degree of frequency they are formed in the newer varieties. We may expect from this history that the variations which occur in these flowers will be variations in size and habit chiefly, and not of so remarkable a character as in the case where hybridisation intervenes. The illustration from specimens provided by Mr. Harry Turner, of Slough, and Messrs. H. Cannell & Sons, Swanley, show the typical *V. odorata* and some of the newer varieties (fig. 81).

Fig. 80 represents a form of *V. odorata*, known as *sulfurea*, and which was exhibited by Messrs. R.



FIG. 80.—*VIOLA ODORATA* VAR. *SULFUREA*.

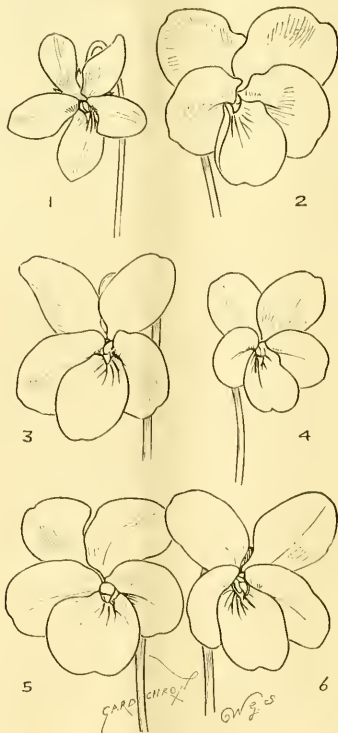


FIG. 81.—VARIETIES OF VIOLET.

- 1, *V. odorata*, typical.
- 2, *V. Princess of Wales*.
- 3, *V. Primavera*.
- 4, *V. Amiral Arellan*.
- 5, *V. Princess Beatrice*.
- 6, *V. Italia*.

Veitch & Son, Exeter, at one of the recent shows of the Royal Horticultural Society, is reported to be a native of the South of France, and bears dull sulphur-coloured flowers. The figure, which represents a plant about the size of our wild *V. odorata*, may be compared with the relatively gigantic proportions of some of the newer forms such as the *Czar*, *California* and others.

The second illustration (fig. 81) shows five of the newer varieties with a flower of the original species for the sake of comparison (1). For a few notes on the special characteristics of these varieties we are indebted to Mr. Turner:—

"*Princess of Wales* (2).—This is one of the largest single Violets in cultivation, the flowers being large and highly scented. The colour is a brighter blue than the *Czar* or other old varieties, the flower-stems are very strong, 6 to 8 inches in length, and the foliage is most robust, it is also a hardy variety, and flowers from September until April. See also fig. 82.

"*Primavera* (3).—This is an Italian introduction, and is rather darker in colour than "*Italia*," but very sweet and dwarfer in growth.

"*Amiral Arellan* (4).—This is a very distinct variety, the colour being rich purple. The plant is dwarf in growth, and it is very free-flowering.

"*Princess Beatrice* (5).—Another single variety, which is darker in colour than the *Princess of Wales*. It is not so robust in habit, but is very free-flowering. Mr. Smith, in making the drawing, made the interesting observation that this is the only variety destitute of a hairy fringe within.

"*Italia* (6).—A new variety, introduced from Italy last season. It is a free-growing and free-flowering variety. The flowers are a lovely shade of dark blue, and they rise well above the foliage."

California (see fig. 83).—As to this fine variety, Mr. House, of Westbury-on-Trym, furnishes the following interesting particulars. The new Giant Violet *California* is quite hardy, and a most rampant grower, with very large leaves, which are always to be had. It is easily propagated, and is a most prolific bloomer, with flower-stems frequently 10 inches to 1 foot in length. The flowers often measure from 1½ to 2 inches in diameter, are very fragrant, of an intense violet colour, which does not fade. *California* is already becoming a universal favourite, and the flowers will command high prices for some time to come. From a tradesman's point of view this Violet stands at the top. Although a profitable plant for open-air culture, it is unquestionably better for protection. The plan I adopt is as follows. Plant out the divisions or rooted cuttings, as the case may be, in April, in good deep soil, with a little rotted cow-manure mixed in. Give the plants plenty of room, and a position in partial shade for the summer months. Pinch off the runners and afford an occasional watering in dry weather; they will then grow very rapidly, and make strong clumps for lifting in September. Plant near the glass in light airy frames, and, if protection is necessary, use mats. This variety especially objects to heat.

The Violets like a lime-stone soil, and a seaside situation, which secures pure air; hence their culture in the immediate vicinity of London is becoming increasingly difficult, if not impossible. Articles on the culture of Violets will be found in our volume for the first half of the year 1889, pp. 137, 173, 201, 307, 373, 437, 532, 628.

GARDENING IN RUSSIA.

THE district of Wilna is celebrated for its market-gardens, which supply the greater portion of the fresh vegetables consumed in Warsaw and St. Petersburg in the spring, and with Melons during the summer months. The cultivation of vegetables is carried on, not by gardeners, but by raisers and improvers of vegetables—the so-called *Ogorodniki*. For raising the plants, 32,000 hot-bed frames or lights are employed in the spring months, and the chief articles raised at that season consist of "Stelen," i.e., Beetroot, Carrots, Parsley, Dill, Lettuce, and Radish. When the spring crops are gathered, the hot-beds are utilised for the raising of Cauliflowers, Melons, and Cucumbers. Of the last-named, almost

the only variety grown is the Russian (Trauben-Gurke) Grape-Cucumber, which, although its fruits are very small, are produced in great abundance; and being aromatic, and of excellent flavour, they are eaten in preference to any other. The variety has the good property of scarcely ever failing to crop well, and it is hardly possible to form an idea of the abundance of the crop. A single Ogorodniki in one summer, daily harvests 4000 fruits.

Besides the vegetables raised and cultivated in hot-bed frames, large quantities are grown in the fields. These fields are divided into beds 1.75 metres (about 5 feet 9 inches) wide, the length being indefinite; and the beds are separated by alleys 0.7 metres (27½ inches) broad, which are thrown out by the plough, and the earth thus loosened is cast over the beds, so that a bed has a height of 40 to 50 cm. Cart-roads do not exist. In the middle of each bed a row of Framswick Cabbage is planted, on each side of which a row of plants of the Russian Grape-Cucumber or Gherkin is planted, which is a sort of the bine of which does not spread widely. Next to these, on each side, come Red Beets; and lastly, as an edging all round a bed, one row of Potato-Onions is planted.

This method of planting is universally followed in the Wilna district. The leaves of the Potato-Onion are constantly cut, just as we do with our Chives, and these leaves form a part of the daily food of the Russian peasantry, who live for weeks on nothing better than black (brown) bread and some finely-shred Onion-leaves. In Nischni-Novogorod I obtained fresh caviare served with finely shred Onion-leaves, which, to us Western Europeans, seemed a horrible mixture. The Ogorodniki are of the opinion that by cutting the leaves of the Onion they increase the size of the bulb. However that may be, the Onions taste very nice eaten in the following manner:—First a slice of dry roll, and on the top of this a slice of Onion, above that one of Tomato strewed with caviare. *Probatum est.*

The first plants to become fit for consumption are the Potato-Onions, whose leaves, as I have remarked, are eaten by the folk with much gusto, and not despised even by the well-to-do. The Russian farmer is easily satisfied—a chunk of dry black-bread, and slices cut from a bundle, 1½ inch in diameter, of Onion-leaves, eaten as one consumes a sausage, serves for his mid-day meal. Onion-leaves are eaten in soups and with cold dishes.

In order to prevent the Potato-Onion from running to seed, they are, in the winter, exposed to a course of fumigation with wood-smoke for twenty-four hours. The cultivator continues to cut the leaves of the Potato-Onion up to the time when they begin to wither naturally. When the Onion-crop ceases to be productive, the Gherkin fruits begin to mature. The Russian Trauben-Gurke differs from most of the other European Oherkins or Cucumbers in its earliness, productivity, hardiness, and being but little influenced by the weather. The fruit averages 1½ to 1¾ inch in diameter, and 3 to 4 inches in length, and may be consumed in the raw state, or as a pickle in brine.

Wilna possesses a very extensive nursery, in which fruit trees are chiefly raised. The proprietor, M. Wöhler, also cultivates pot-plants in large numbers. Here it struck me as something peculiar, that despite the excessively severe character of the winters in this part of Russia, only single lights were employed on houses and pits; still more striking was the statement that these single glass-roofs suffice to protect the plants in the severest frosts—32° Réaumur at St. Petersburg, and—35° Réaumur at Moscow.

The most important nursery is found in St. Petersburg, viz., that of Mr. Eiler, who has ranges of glasshouses, more than 2500 metres in length—say 1½ miles English—and the greater number of these houses are devoted to the cultivation of Roses. Formerly he used to cut Roses the entire year, but now, owing to the heavy importation of cut-blossoms of Roses from the Riviera and southern France, there is a cessation in the cutting in the autumn; a start being again made at Christmas, when flowers are sent to his numerous flower-shops and stalls in the

town. He cuts in the winter months about 2000 blossoms daily.

His method of cultivating the Camellia is interesting, and different to what is practised elsewhere. A lean-to glasshouse of great height and breadth is furnished with a stepped staging, on which are placed boxes running the entire length of the house, half a yard

amount of disturbance of the roots arising from this ensures a good set of flower-buds. The plants require nothing more than to be kept somewhat dry at the roots after they are established in the pots, and they flower freely in the winter months, being then disposed of at from five to six roubles a-piece; the value, therefore, of the plants having increased in one and a quarter year's twelve fold. Loss of plants or failure to set flower-buds are rarely, if ever, experienced.

The number of the Lily of the Valley which are forced in Mr. Eiler's nursery is very considerable. The forcing of these roots is carried out in a house that is constructed inside of another house, and 1,000,000 (one million) crowns are forced yearly. The forcing of Hyacinths, Tulips, and Crocus is also carried out to a large extent; for besides supplying his own requirements, he furnishes the Imperial gardens with considerable quantities of flowers. A most desirable novelty noted in Eiler's nursery was a white, double-flowered Petunia, of fine form and agreeable aroma, named Elise Eiler. The variety is propagated by the thousand every year, the flowers forming excellent material for cutting. Of biological interest was the fact that during the months of June and July, when the nights are as light as day (St. Petersburg is situated under the 60th degree of N. latitude, therefore near the polar circle), Cyclamens scarcely grow at all, and only begin to grow with any vigour when the nights grow darker.

The cultivation of Carnations—18,000 plants—and Sweet Peas is largely carried on. The latter are sown in pots in the autumn, and later on they are planted in front of a trellis, furnishing flowers for cutting throughout the winter. *Udo Dammer.*

(To be continued.)

HARDY CAMELLIAS.

MANY years have elapsed since I last visited Glen Eyre, the residence of Major Eyre Crabbe, and where the late Mrs. Crabbe converted a sort of heathy morass into a lovely garden. Glen Eyre is not far from the famous Red Lodge Nursery, and a peaty soil runs all through the district, so that Rhododendrons and American plants generally, as well as Conifers, flourish amazingly. The groups of Rhododendrons in Glen Eyre gardens have broken out into mounds, for they have grown wondrously, and are in the proper seasons literally huge masses of bloom. But the great feature of the place, without doubt, is found in the exceeding number of very fine Camellias growing in all directions, and in their season blooming profusely. The growth with most is almost luxuriant, and whether standing out on grass as single specimens, or growing singly as such on hardy plant borders, or jutting out from faces of ordinary shrubs, or found in masses, or planted against walls where they can now hardly be said to be trained, the plants are generally in first-rate form; and in growth, in richness of leafage, or in floriferousness, quite equal to anything seen in houses, even where they are planted out. It was very evident at Glen Eyre that Camellias enjoy rather rude treatment very well, for the hard cutting-back of any that seemed to become rather bare of leafage quickly led to the production of new and luxuriant growths. When to this new inspiration was added a little top-dressing of old manure and fresh soil, the plants soon became as robust as ever. There were a few varieties that seemed less robust than others, but that may have been due to some other causes, perhaps lack of essential food. All the same, it is evident that the natural soil is that which Camellias like, and generally, if deeply worked, it needs little artificial help. It looks, judging by what is seen in all directions, as if any varieties that are fairly good growers would do well out-of-doors at Glen Eyre. Doubtless, also, they would do equally well if planted south of London in similar peaty soil, and enjoyed similar surroundings. Many of these huge shrubs have been planted fully thirty years, perhaps longer.

The gardener, Mr. Stewart, who has been in the



FIG. 82.—VIOLET PRINCESS OF WALES.
(SEE P. 248.)



FIG. 83.—VIOLET CALIFORNIA.
(SEE P. 248.)

wide and 4 inches deep, and behind each box there is a narrow passage. The boxes are filled with a light kind of turfy-soil, and young Camellia plants bought in Germany for 90 pfennings each are planted out in them in the autumn. The plants are syringed, not watered. When next year's growth is matured, i.e., when the latest leaf is become hard, the plants are taken out of the boxes and potted; and the small

family's service close upon forty-four years, commenced in conjunction with Mrs. Crabbe, to lay out and plant the place forty years ago; and no doubt some of the Camellias were planted soon after. In any case, the trees and shrubs have grown together, and form a shelter from wild wind-storms. It must not, however, be concluded that, judged by what is seen under glass, the Camellia is at all a tender shrub. At Glen Eyre it is as hardy as any other in the gardens, and seems never to suffer from cold. No doubt intense sun-heat is the more objectionable, and hence here it is found that, in some parts, especially for those on walls, partial shade is furnished. There are, however, several very fine specimens standing singly on a south aspect, both on grass and gravel, exposed to the hottest of sunshine, and doing splendidly. Hence, it may be inferred that the Camellia is a very accommodating hardy shrub. As to producing bloom, position seems to make no difference. Whether in shade or in sunshine, nearly the whole of the plants are now blooming profusely. Generally, they carry buds in wondrous profusion, so much so, indeed, that did time and labour permit, it would pay well to largely disbud. As to the condition in which plants should be put out, Mr. Stewart has, because of his wide experience, no bias. He has planted pot-bou 1 comparatively stunted ones, and strong, free-growing young ones. The latter have, of course, the sooner taken to the change, because better rooted. With the stunted plants the first year's growth is weak, but very soon the roots feel their liberty, and once they get well hold of the ground, soon produce strong wood-growth. When that is so, it is good practice to shorten back somewhat the more stunted branches, and in a couple of years a handsome well-wooded bush is produced. Plants in pots, hitherto grown under glass, should be allowed to make their spring shoots first, the planting out being done towards the end of April. Afterwards it is the habit of the Camellia generally to push the spring-shoots later, and thus they escape harm from late spring frosts. Amongst varieties, not a few of which have through so many years lost their names, are Old Double Red, Double White, McKay's Lowi, Duchess of Northumberland, Chaudleri, Imbricata, Violaesa superba, Anemoniflora, Old Double Striped, and some Italian varieties. Conifers are very fine in this place, and seem to be singularly at home on a steep sloping bank. *Paulownia imperialis* is here a very fine tree, the bole of the stem 4 feet from the ground being 3 feet in diameter. Skimmias are largely used for winter and spring decoration, whether plunged into vases or planted out into beds. The plants berry most profusely, and the birds do not touch the scarlet fruits. Presently the plants will go to the small nursery garden for the summer, and next winter will again do duty as now. So treated the *Skimmia japonica* becomes a beautiful decorative hardy shrub. *A. D.*

CHICORY IN WINTER.

THE following remarks do not altogether refer to the value of Chicory for salad purposes, but to its value as a vegetable when specially grown for the latter purpose. There are not many varieties of Chicory, and I consider the best to be Witloof, a Continental variety, that has been grown for some years in this country. This Witloof is largely grown upon the Continent, and esteemed as a winter vegetable, or for salad purposes; and I have noted latterly that a considerable quantity is imported into this country during January and February, and that it finds a ready sale.

I first grew the Witloof and stored the roots in a shed early in October—but there is no need to do so, as our roots stood the severe winter of 1895 uninjured; indeed, I find the roots winter best in the open if the soil is well drained. The common variety—Barbe de Capucin—is so poor compared to the Witloof, that it scarcely merits mention. The other kind most known is doubtless a selection from the common one, but with larger roots, and inferior to the Belgian type. These are very useful for

salads, as the leaf being out up into small pieces, its size or shape matters little, Chicory with large tops blanches more readily, and does not run to seed so quickly. When used as a vegetable, it is advisable to get a good top-growth somewhat like Seakale, and if the Witloof is grown for the purpose, and forced slowly, it produces such growth. The Witloof is less litter also than the older variety, and many who have tasted it find it more agreeable, while others value it for its distinct flavour.

Many err in sowing the seed too early in dry warm soils, in which it is apt to run to seed. Last year, owing to heat and drought, we did not sow till June, and even then germination was slow; but with the genial autumn rains the plants soon made head-way. In a light soil, June sowings gave a late water supply, but on clay soils it would be better to sow in May. The plant requires plenty of room; it is a strong grower, and requires 2 feet space between the rows in good soil, or 6 inches less in heavy soil, thinning the plants in the rows to half that distance. Of course, this kind of culture is intended to furnish a vegetable crop, but even for salad purposes it is well to give the best cultivation, and thus obtain more material to cut from. During summer merely keep the ground clear between the rows, and if especially large-sized roots are wanted, afford a little liquid manure, which will produce a finer growth. I find, however, that roots large enough can be got without such food, and coarse roots are liable to run to seed. If I require to prepare the ground for another crop, the roots are lifted and placed in trenches rather close together, and winter them thus, removing the roots as needed to the Mushroom-house to force. The best way to do this is to place the roots in pots or boxes, and then invert empty boxes or pots over them. If required as a vegetable, cut the tops when 6 inches long, and cook like Seakale. It may also be easily forced in the open by covering with pots, &c., and placing litter over the covers, but damp soon spoils the heads if hard forced. *G. Wythes.*

NURSERY NOTES.

CARNATIONS IN CAMBRIDGESHIRE.

NEAR to the March Junction of the Great Eastern Railway two young men—Messrs. Crane & Clarke—have established themselves as growers on a large scale of Tree Carnations, cultivating some 20,000 plants, a considerable proportion of which are vigorous, cleanly-grown plants of two years old, intended for the production of cut-bloom for sale purposes. The proprietors gather Carnation flowers for about a period of ten months in the year. The leading varieties are William Robinson, a brilliant scarlet, which they recently exhibited in very fine character at one of the meetings of the Royal Horticultural Society; a vigorous grower, free of bloom, probably the finest of its colour in cultivation. Madame Thérèse Franco, which is better known in the London district under the name of Mrs. Leopold de Rothschild; Duke of York, bright maroon-crimson; Miss Mary Godfrey, and Primrose Day, a large pale yellow. The coming white variety is a new and scarce Deutsche Braut, a magnificent white, with large, full flowers, highly fragrant, good habit, and very free-blooming. A few others are grown, but the foregoing in by far the largest quantities. A new pink variety, a great improvement upon Miss Joliffe, is spoken very highly of by Messrs. Crane & Clarke, but the stock of it at present is very limited.

White and pink Carnations find the greatest favour in the market, then scarlet, and next crimson; yellow being apparently least esteemed. A Tree Carnation is regarded as being at its best when two years old, and is then most productive of blooms.

An enormous number of fine young plants raised from cuttings struck in January is to be seen. They are now in 48-pots, and when they have reached the height of 9 inches or so, the leading shoot is pinched out; this causes the main stem to put forth young side-shoots freely, and in this way bushy, free-branched specimens are obtained. Clay's manure is applied as a fertiliser, but only when the plants are flowering, to assist the production of bloom.

Bouvardias, tuberous-rooted Begonias, and double-flowered Petonias in particular, are grown in large

quantities, and considerable numbers when in a young state are distributed by post. But Carnations are the leading feature, and it must be acknowledged that they are cultivated with great skill and success. An enormous number of young plants of Carnations are distributed from this nursery at this season of the year. *R. D.*

KEW NOTES.

CALIFORNIAN OR MOUNTAIN LAUREL (*Umbellularia Californica, Nutt.*).—An example of this interesting *Laurelia* is now flowering, though somewhat sparsely, on a wall in the open at Kew. In its native habitat it forms an elegant evergreen tree of from 40 to 120 feet in height, and from 2 to 4 feet in diameter, and has a smooth bark. The timber is of a light brown colour, hard and close-grained, and susceptible of taking a high polish, and in Oregon is used for a variety of purposes, the most important of which is ship-building; and, in fact, it is considered to be the most valuable wood of the Pacific forests for interior and cabinet work. The whole tree is highly aromatic, and the leaves, when bruised, give off a powerful camphoraceous odour. It has been stated by travellers that during a hurricane the odour is so strong beneath the shade of a forest of these trees as to provoke sneezing. Hunters are said to make a decoction of the leaves, which is used without any apparent injurious effect, to promote warmth. *J. M. H.*

PINUS THUNBERGII VAR. AUREA.

One of the brightest of winter trees is the golden variety of the Scotch Pine. During the spring and summer it is green, like the ordinary *P. sylvestris*, assuming its gayest dress during the autumn, and losing it again the following March. Until recently no other Pine was in cultivation that equalled it in colour, but now there is at Kew a similar variety of the Japanese *P. Thunbergii* (often called *P. Massoniana* in gardens), which promises, when thoroughly established, to be of at least equal value. Its golden colour during winter is quite as pronounced as that of the Scotch Pine just mentioned, and it retains it longer, being still, in April, of quite a bright yellow. Another variety—*P. Thunbergii variegata*—imported from Japan at the same time, may be briefly mentioned as also now to cultivation, although it is not, from the garden stand-point, so promising a tree as the other. In this variety the leaves are marked with one or two transverse bands of yellow near the middle, the remainder of the leaf being green as in the ordinary form.

CAMELLIAS OUT-OF-DOORS.

THE value of the Camellia out-of-doors in this country has scarcely yet been realised, except in the far south-west; but even as far north as Kew it is every year proving more beautiful and attractive as a hardy shrub. Of course, in bleak, wind-swept places it is not likely to thrive, but that much has to be said of many evergreens. In the Rhododendron Dell at Kew, in a spot shaded till noon, it has proved a perfect success, and as hardy as any Rhododendron. A group of plants was put out about eight years ago, and, except from the trees and shrubs around it, had no protection. In spite of the severe winters during that period, they have increased in vigour yearly, and would be worth growing as evergreens for the deep shining green of the leaves alone. For the last few years they have flowered freely, and one variety especially—*Douckelaari*—has been most attractive. It is of free growth, and the semi-double flowers are of a rich scarlet crimson, the inner petals slightly mottled with pink. Hardy shrubs with flowers of this colour are very rare at any season.

PRUNUS NANA (THE DWARF ALMOND).

One of the prettiest of dwarf shrubs in flower is this bushy Almond, a native of Southern Russia. The abundant sunshine of last summer evidently suited it, for its flowers, both in the bud and fully open, states, thickly wreath last year's wood. When fully expanded, they are three-quarters of an inch across, the five oblong petals being of a pale rose contrasting prettily with the deeper shade of the unopened buds. The flowers are borne in pairs a

each node, and from between them the young leaves, are pushing. These, when mature, are of a glossy green, lanceolate, toothed, and 2 to 3 inches long. This shrub is frequently worked on the Plum or some other stock, and is short-lived in consequence, which is, perhaps, the reason it is not so often seen as one would expect from its great charm and beauty. Budding is a quite unnecessary mode of propagation, for it roots freely when layered. A bed of young plants thus raised two or three years ago is in flower at Kew. It is likely to prove useful also for forcing, some plants of the same batch having flowered well a few weeks ago in the conservatory. W. J. B.

freely, each being $3\frac{1}{2}$ inches long, by $1\frac{1}{2}$ inch wide, and composed of fan-shaped scales with two seeds beneath each.

Though stiff in habit of growth, yet the branches being irregular of length, causes the tree to be informal of outline. It does not grow rapidly, and is therefore suitable for rather confined spaces. Some of the largest and best furnished specimens in this country are growing in peaty earth.

DAPHNE FLAGAYANA.

Among early-flowering shrubs, this charming little *Daphne* is well worthy of mention. It is too rare, and requires, perhaps, conditions of too special a

In the open ground, we find it thrives well in a peaty soil, its roots covered with pieces of fairly thick porous stone. It can most conveniently be propagated by layering. *A. D. Webster.* [Figured in *Gard. Chron.*, 1892, p. 491. Ed.]

FLORISTS' FLOWERS.

THE HYACINTH.

It is probably owing to the fact that competitions with Hyacinths and other spring flowers do not occur in the present day, that so few novelties have put in appearance of late years. Thirty years ago, when



FIG. 54.—*PICEA POLITA*: BRANCH WITH CONES. (REAL SIZE.)

TREES AND SHRUBS.

PICEA POLITA.

Judging from the rarity with which one meets with the above-named tree in this country, it must be regarded as a rare species. This is unfortunate, for it is certainly one of the most distinct and beautiful of the Spruce Firs, and when once seen is not apt to be forgotten or confused with any other. The leaves are long, curved, and four-sided, broad at the base, comparatively persistent, and of a glossy green colour. They are produced all around the branches, but thickest and largest on the upper sides. The prominent brown buds are readily detected, they being often three-quarters of an inch long. Cones are produced

nature to ever become a very familiar plant in this country, but it is certainly one that ought to be represented as often as possible wherever suitable conditions can be provided. It is a low-growing, semi-prostrate evergreen, usually under 1 foot high, with dark green, narrow obovate leaves, 1 to 2 inches long. The flowers are crowded in a terminal cluster, and are of a pretty creamy-white, each flower half an inch across, and three-quarters of an inch long. It is not only to the modest beauty of its flowers, but to their sweet perfume also, that this little *Daphne* owes its charm. It is a native of the mountains of Styria, and was discovered sixty years ago, but the date of introduction is given as 1872. It is essentially a rockery-plant, and succeeds best in a sunny spot, but with its roots kept uniformly cool and moist.

The names of Cutbus' and Paul were closely associated with the culture of the Hyacinth for exhibition purposes, new varieties appeared annually, and a very brisk competition existed among raisers in getting their novelties grown and exhibited in this country. Now, new additions are rare; and probably one main reason for this is that so many fine varieties of all shades of colour peculiar to the Hyacinth are now in cultivation, that it is difficult to improve upon them; and good old varieties, many of which have been grown for a considerable number of years, still hold their own.

The double varieties, so much esteemed by our forefathers, are no longer favourably regarded. They lack the closeness, finish, breadth, and symmetry of spike which characterises the singles; hence the

reason the latter are more esteemed. Of the deeper shades of red, King of Scarlets, a comparatively new variety, is very brilliant in its rich crimson colour, and it produces a fine and compact spike; Etna, as its name implies, has a striking intensity of colour—its handsome bells gather into a symmetrical spike; Vesuvius, of a deep glowing crimson shade; and such standard varieties as Solferatte, of a bright shade of rose-red; Lord Macaulay, king of the reds; Koh-inoor, which, though classed with the single varieties, is really semi-double; Lord Macaulay and Von Schiller make up the finest among the deep-tinted Hyacinths. Of more delicate shades of rose and pink are King of Roses, pale pinkish-rose, which forms a very handsome spike; L'Ornement Rose, clear bright rose, a very pleasing new variety; Moreno, bright salmon-pink, an improvement upon Norma; Pink Perfection, clear pink; and Belladonna, clear soft rose—a very good selection. Blue is always a favourite colour in the Hyacinth, whether the tint be dark or light; of almost black and dark-claret shades are King of the Blacks, very dark shining maroon; the Sultan, in the same way, but with more of wine-colour mingling with the black; and The Shah, dark violet. Of deeper tints of blue are Souvenir de J. H. Veer, dark violet-blue; King of the Blues, one of the handsomest and most reliable Hyacinths in cultivation; Duke of Clarence, rich bright blue; Anca Bolena, purple; and Masterpiece, dark violet. Among the lighter shades of blue there are some charming varieties, such as Beauty, soft azure-blue; Celestina, clear transparent blue; Forget-me-Not, a very pretty new light blue; Lothar, delicate azure-blue; and Queen of the Blues, soft and very lovely. Charles Dickens, an old variety, holds its own; it is sometimes light in tint, often much darker, but always good. The large-belled, pure white varieties are represented by Snow King, which has large bells of great substance; La Grandesse, L'Innocence, Madame Van der Hoop, and Snowball, all fine standard varieties. Of the smaller-belled pure white varieties there are Mountain of Snow, a refined white of great excellence, the handsome bells forming a compact spike; Mont Blanc, Lady Derby, and Alba maxima, a quartette representing the very best of blush and waxy-white tinted varieties, all of which it is customary to class under the general head of white; there are Charles Dickens, La Belle, La Franchise, Grandeur à Merveille, probably the best blush-white single Hyacinths in cultivation; and Princess Marie, which forms a large and compact truss.

Very few additions are made to the yellow Hyacinths, and there is ample need for improvement; there are but few clear yellows, and they are pale, and the bells smaller generally than those of any other section. King of the Yellows is one of the best; it is the deepest in colour, and forms a very handsome truss. Primrose Perfection, Queen of the Yellows, Van Vondel, and Yellow Hammer, are all new varieties; the last the deepest in colour, Van Vondel being of a soft chrome-yellow. Bird of Paradise, and Ida are the best of the older varieties. The Yellows require high culture to bring them to perfection, and when well grown, and the spikes finely developed, they impart a pleasing variety to a collection.

RAISING SEEDLING PRIMROSES, POLYANTHUSES, &c.

The continued wet weather greatly interfered with the planting out of seedling Primroses, and Polanthus obtained from seeds sown in August last. Seeds sown so soon as ripe germinate quickly, though to a considerable extent successively, as is the case with most of the families of Primula, a characteristic which is not without its advantages, as it enables the earliest plants, which are the most vigorous, and almost invariably the least valuable in point of quality, to be pricked off into boxes, and so make room for the other and later plants. Seeds sown in a light sandy soil in pans, spreading them thinly, and merely covering them with sand, quickly germinate, especially if pieces of glass be placed over the pan. We sometimes hear of complaints that the seeds do not germinate; but raisers are apt to be too im-

patient, and do not afford them sufficient time. Probably not a few pots and pans of seedlings have been thrown away in the belief that the seeds were bad; whereas, all that was required were time and the exercise of patience. Seedlings so raised, and then pricked-off into cold frames, are ready to go out in the open in March or April, when the soil is dry enough. Not a few of the strongest of these will flower in May or later, and all make fine plants for another season. The coloured Primroses and Polyanthus are at their best as strong two-year-old plants.

PENTSTEMONS, ANTIARRINUMS, AQUILEGIAS.

The various types of Pansies, Aubrietias, Canterbury Bells, Foxgloves, &c., raised from seeds sown at the end of the summer, are ready to go out also, but the lightest soil cannot be trodden while blustering rain-showers follow each other in such quick succession as they did in March. The sooner it can be done the better, for a long spell of dry weather may, and probably will, follow the wet winter—and it is therefore necessary that newly-planted things should begin to lay hold upon the soil. After much wet, it is necessary as soon as drying weather comes, to fork over the surface and well pulverise it, so that the newly-planted things should have a firm hold and get well into growth as speedily as possible; they will be helped if a little sand and fine leaf-mould can be put about the roots of each. Happily at this season of the year the surface-soil soon dries, and becomes workable, though in the case of ground which contains clay, the heavy rains so heat it down that quite a hard crust was formed, and there is urgent need for breaking it into fragments as soon as the weather permits.

The wet weather appears to have done more injury to *Myosotis dissitiflora* than to any other spring flower. It never does so well as when it occupies a warm sheltered spot, where wintry storms scarcely reach it. I have never seen this beautiful *Forget-me-Not* finer than at Hayling Island, when the common Primroses are in full bloom. R. D.

THE WEEK'S WORK.

FRUITS UNDER GLASS.

By F. HARRIS, Gardener, Eastnor Castle, Leicestershire.

Pot Vines that are now ripening their fruit should be given plenty of ventilation, and although not allowing them to become at all dry, they will not require so much moisture either at the root or in the atmosphere. Where the fruit is required to hang for a few weeks, the Vines should be encouraged to continue making a little lateral growth, which will keep the roots in active condition, and thus assist to keep the berries plump and in good form. If very bright sunshine should occur, a little shade in the middle of the day will be beneficial to the black varieties; but in the case of white or yellow ones, turn the leaves back a little to admit direct sunlight. This, however, should not be done too soon or too rapidly, or the berries may become scalded, especially those of Foster's Seedling. If the house be damped down at mid-day it is sufficient for Grapes that are ripening, unless the weather is very hot and dry.

Early Vinery.—If the stoning period be past, and the berries have commenced their second swelling, a soaking of liquid manure of moderate strength may be afforded, at a temperature of 85°. If manure-water is not available, sprinkle a good artificial manure over the border before watering. If it be necessary to hurry the Vines, take advantage of the present time, but damp down frequently and close early, allowing the temperature to run up to 95° with sun heat. The night temperature may be kept at 65°. Beware of red spider, as this is the time generally when it first appears. On its first appearance, sponge the little spot over with soapy water. Another excellent preventative, which I always follow, is to have a can of pure soft water placed in the house at closing-time, then at dusk, with a fine rose-nozzle on the syringe, I carefully spray the foliage between the bunches, wherever it can safely be done, especially near the hot water pipes. By this means the foliage is kept damp all night. If pure soft water only is used, there need be no fear of the bloom being damaged in the least, even should a little water reach the bunches, which we avoid as much as possible.

Succession Vinerics.—The temperature of houses containing Vines in flower should be 60° to 65° for most varieties, with 65° to 70° in the case of Muscats; but should the weather be very cold, we often find it impossible to keep to these temperatures, and I have on several occasions seen my Muscat-house at 55° in the morning. If there is a good warmth in the pipes, and the house has a warm genial feeling on entering it, I do not think so much harm is likely to ensue as if the houses are excessively fired. We invariably get a good set here, with careful attention to fertilisation, and although we favour the temperatures mentioned above, high temperatures are not absolutely necessary, if carried to excess they are often the cause of red-spider. Keep the shoots in succession and late houses just clear of the glass, and give due attention to stopping and rubbing off all weak and superfluous growths while in a small state, and gradually reduce them to the requisite quantity as it becomes apparent what are required to fill the trellis without overcrowding, always, of course, leaving the shoots which are carrying the best bunches of fruit.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower, Burford, Dorking.

Dendrobiums.—Many of the following species and hybrids will now be passing out of bloom, D. Wardianum, D. crassinode, D. nobile, D. heterocarpum, D. Findlayianum, D. superbum, D. capillipes, D. primum, D. Linawianum, D. cucullatum, D. cretaceum, D. crepidatum, D. Ainsworthii, D. Cassiope, D. Wigane, D. Downii, D. Dulce (Burfordense), D. Endocharis, D. splendissimum, D. Venus, &c., and others. If any of these plants have become pot-bound, have them repotted at once, and place them in the East Indian-house or plant-stove to make their growth. All the varieties named above will grow well in Teak-wood baskets or shallow pans, which may be suspended close to the roof-glass, where they will obtain plenty of sunlight. Such plants as D. nobile, D. splendissimum, D. Ainsworthii, D. Dulce, &c., and D. Wigane, which produce strong erect growths, thrive thoroughly well in pots, provided they obtain sufficient light. For young seedlings and varieties of pendulous habit, small shallow pans, with perforations around their sides are preferable. Allow the plants to become quite dry previous to repotting, so that the old material may be easily removed. In the case of well-established plants root disturbance should be avoided as much as possible. My practice is to carefully break the old pot, and take away as much of it as is practicable, and if the drainage be filled with healthy roots, this is not disturbed, but the whole is placed in a pot a size larger. The space between the roots and the pot is filled with clean crocks up to within half an inch of the rim. The old potting material should consist of equal parts of fibrous peat and sphagnum-moss, with clean crocks added, and the compost should be pressed moderately firm around the plants. The necessary staking should be done immediately after potting, as it is difficult to do this without injury when the young roots are pushing freely through the soil. Healthy plants having sufficient room for further development should be relieved of the old compost from between the roots, even down to the crocks, and if necessary additional drainage may be given to lessen the amount of compost about the plants, and to great depth, as this is injurious to them. For such slender-growing varieties as D. Huttoni, D. O'Brienianum, D. purpureum, D. triadenum, D. Pierardi, D. sanguineum, D. lituiflorum and its rare variety candidum, D. micans, D. rhodostoma, &c., and others, sphagnum-moss alone is needed. Young seedlings also grow stronger and more freely in moss than in peat. Recently-imported pseudo-bulbs should at first be placed in crocks only, and kept in the Cattleya or intermediate-house until growth commences, when they may be potted and placed in a warm, good atmosphere. The most important and careful note to observe in repotting newly-imported *Dendrobiums*, because if the roots get into a mass of sodden compost they speedily decay. For the first few weeks after re-potting or top-dressing, water must be supplied with unusual care, merely sprinkling the surface of the compost occasionally to induce the sphagnum-moss to grow moderately. When the roots have obtained a firm hold of the soil and around the inside of the pot, the amount of water may be gradually increased. As the young growths progress, syringing the under-sides of the foliage very lightly with tepid rain-water at closing time on warm sunny afternoons. Instead of watering *Dendrobiums* in the morning, as is generally recommended, we always commence to water those that

require it at about 2 P.M. When this operation is completed, the plants are slightly dewed with a fine syringe, the blinds are then drawn up, and the plants exposed to the full afternoon's sunshine. By such practice the plants during the evening and the cool hours of the night absorb sufficient moisture to carry them safely through the heat of the following day; but if they were watered on the morning of a hot, drying day, the surface of the compost becomes as dry as dust by noon, and it is impossible then to tell whether they really are wet or dry. Such species as *D. Dalhousianum*, *D. fimbriatum*, *D. Paxtoni*, *D. moschatum*, *D. calcosus*, *D. clavatum*, and *D. Brymerianum*, are now showing their flower-spikes, and should be afforded more water at the root. The evergreen section, including *D. thyrsoiflorum*, *D. densiflorum*, *D. Farmeri*, *D. Schoderi*, *D. Griffithianum*, *D. variciflorum*, *D. Gumbertianum*, and *D. chrysoctonum*, are also producing their flower-buds, and will now require a warmer atmosphere than their resting-quarters, and a little extra water at the root. *D. Benoniæ*, *D. Parisiæ*, *D. rhodopterium*, *D. uodatum*, *D. pulchellum*, and others that flower later on, must still be kept quiet until their flower-buds are well advanced.

THE HARDY FRUIT GARDEN.

By H. W. WARD, Rayleigh, Essex.

Disbudding and Training of Young Growth.—The disbudding and training of young growths being a very important and pressing cultural operation, should have almost daily attention. Hence the reason for reiterating the remarks I have made in previous calendars. The disbudding of the Peach and other fruit trees sufficiently advanced in growth to admit of this being done forthwith, should be finished, so as not to unnecessarily waste the forces of the trees by deferring the operation till the shoots have reached several inches in length before removing them. In disbudding a tree the lateral, or those shoots which arise from the sides of the branches, should be reserved for affording fruit next year, and these growths should be laid in equi-distant, when possible, between the branches from which they spring. This job is readily done with the straight twigs of the Birch, Hazel, Privet, &c., or the weak prunings of fruit trees, or if the work be wired they may be tied with raffia or bast, which latter should be loosely tied, so as to afford room for increase of growth in the shoots.

Blight.—Keep a watchful eye on green and black aphids, which, if neglected, rapidly overrun the shoots, doing much harm by sucking the juices of the tree, and defiling the foliage with excrement. On the insects being noticed, the foliage should be washed with the XL All insecticide, or tobacco-juice and clean water. The proper proportion of the XL All is 1 to 30, and that of the latter 1 to 10 or more, according to the strength. The insecticide should be used in the early morning, or in the afternoon after the sun has gone down.

Mildew.—The foliage of the Plum, Peach, Vine, &c., is sometimes affected, when young, with a species of mildew (*Sphaerotheca pannosa*), and weakly trees are more liable to become affected than such as are vigorous. The mildewed leaves should be dusted when damp with flowers-of-sulphur. A somewhat similar mildew attacks the Apple, against which the same means must be employed.

Blistered Leaves are sometimes caused by a fungus (*Exoascus deformans*) and by aphids. The crumpling is very conspicuous on the affected leaves, and when the shoots should be cut off and burned forthwith, and the trees dressed with sulphur and an insecticide. With warmer weather the trees will gradually recover, but it should never be neglected, as it has the effect of spoiling the fruiting-shoots of the next year; moreover, the spores remain to commit similar injury the following year.

PLANTS UNDER GLASS.

By G. H. MACCOCK, Gardener, Latton Hoop Park, Luton.

Poinsettias.—Old plants will now be showing signs of returning activity, and although it is too early yet should be propagated the necessary quantity of plants, which should be placed in a sunny position that good healthy cuttings may be formed. Keep the plants dry at the roots for the present, and afford plenty of air and a moderately cool atmosphere. Next month the first batch of cuttings may be taken, removing them from the stock with a heel attached when not more than 2 inches long. Insert the cuttings in a compost of sand and leaf-mould in equal proportions, and place them under

a bell-glass in the propagating-house, in a bottom-heat of 70° to 75°. Batches of cuttings may be struck as desired until the end of June.

Lilies.—Bulbs of *Lilium auratum* and *lanceifolium*, that were potted up about the end of the year and plunged in cold frames, require attention at this date. Maintain a moist atmosphere day and night, and afford ventilation sparingly during the present cold weather, always closing early in the afternoon. Maintain a minimum temperature of 70° by night and 75° by day.

The Stove.—Examine recently-potted *Anthuriums*, and replace with live sphagnum-moss any of that has failed to grow. Keep the plants in a shady position in the stove. The new roots having taken a firm hold of the fresh material, water may be given them freely. If the plants are on a stage above hot-water pipes, some moisture-holding substance may with advantage be placed underneath the pots, such as common moss, which, if dumped each morning, will prevent the plants becoming dry so frequently. The moss, however, must be frequently examined for algae. Dip and sponge the leaves of *Dracaena* and *Codiaeums*, in a well-proved insecticide, doing this once a fortnight. A petroleum cask sawn through the middle makes a useful vessel for dipping purposes, providing a handle be placed on each side to render it more easily moved. Train the growths of stove climbers before they become entangled. If there is a bed of fermenting materials in the stove, it should be wholly or partially renewed with new. When this has been done, re-plant the plants in it up to the rims of the pots. *Lilium auratum* bulbs should still be kept in cold-frames, and the lights made use of during rainy weather. The potfuls of *L. lanceifolium* and *L. l. album*, *L. tigrinum*, and similar species, may be plunged in coal-shales out-of-doors in some sheltered position. Rain is not so injurious to these as to *L. auratum*; the stems should, however, be made secure against the wind. Any plants of *L. longiflorum* still in cold frames may now be placed in heat of 55° to 65°, if it is wished to forward their flowering.

General Work.—If more room be required in the houses, any plants of *Richardias* that have passed out of flower may be removed to a cold pit or frame where the supply of water at the roots should be decreased. Move into the forcing-house more plants of *Spiræas*, *Spiræas*, *Hydrangea pauciflora*, *Gladiolus Colvillei* alba, &c.

THE FLOWER GARDEN.

By CHARLES HERBES, Gardener, Drogheda, Maidenhead.

Renovating Lawns.—The formation and renovation of lawns by the sowing of grass-seeds should be done during the present month whenever the soil is in a fit condition to bear for working upon. Before sowing, the land should be levelled, and well raked with long-toothed iron rakes, which is an important part of the work, and made thoroughly firm, first trampling it, and afterwards by rolling both before and after sowing. Bare spots on lawns may be slightly forked-up, be given a sprinkling of fine rich loamy soil, raked over, and beaten with a spade or turf-beater, or rolled. Then sow the seeds fairly thickly to ensure a good turf being formed quickly.

Perennial Phloxes.—For providing a late display of these flowers, cuttings should now be inserted in sandy soil in 60-sized pots. Place them in a frame on a mild hot-bed, and shade from bright sun, when roots will soon form, and the plants, after being hardened off, may then be planted in the borders. Spring-struck plants will produce good spikes of bloom about the present time, and should be pruned off. If the old clumps in borders have become very large, they may be split up with a spade into a convenient size, and replanted. This is a ready means of increase, but the heads of bloom are usually not so fine as those produced from plants raised from cuttings.

Michaelmas Daisies.—Plants obtained by potting-up small portions from the outside borders early in the season should now be in a good condition for planting out. Large beds filled with one or more varieties have a fine effect in the autumn, and, although rather out of place in the flower-garden proper, there are usually some odd beds or borders that may be filled with these to advantage. Such varieties as *A. Amelina* major, *A. Robert Parker*, *A. Nancy*, or *A. Harpur Crowe*, and many others, when planted in a mass, make an acceptable change from other forms of bedding.

Daffodils in semi-wild gardens or in grass land where the bulbs cannot be conveniently found for removal after the tops have died away, may be transplanted with care after the flowering is over.

In such a position, however, Daffodils need be rarely disturbed. When moved at this date, the bulbs should be lifted and divided with as little breakage of the roots as possible, and be replanted immediately. Instead of pulling the clumps in pieces and separating the smaller bulbs from the larger, simply break them into small clumps, and plant altogether. If the staple be poor, some of it may be thrown out to allow of a good shovelful of new compost being used for planting in. The bulbs should be placed 3 inches below the surface. Daffodils and other bulbs, as *Scillas*, *Crocuses*, *Hyacinths*, &c., that have been forced in pots should be gradually hardened off and afterwards planted out in some portion of the grounds in the vicinity, if not directly under deciduous trees. Such spots, and may other nooks, may be made beautiful in spring by utilising all spare bulbous subjects in this way.

THE KITCHEN GARDEN.

By W. PORE, Gardener, Highclere Castle, Newbury.

Turnips may now be sown more freely. For summer-sowing, Veitch's Red Globe and Snowball are good varieties. Where tall-growing Peas have been sown sufficiently wide apart to admit of a crop being taken between the rows, Turnips are suitable for the purpose, as the slight shade afforded at certain portions of the day tends to keep the land in a cool and moist condition. From the middle of May until the middle of July sowings are best made on a border with a north aspect, a few rows being sown about once a fortnight, to ensure a constant supply of tender roots during the dry, hot days of summer.

Sorrel.—The present is a good time to increase the stock by division of the clumps. This ought to be done at least once in three years, for if left too long in the same place the leaves are apt to dwindle in size, and the plants throw up seed-stems very early in the season. I find there are two varieties differing greatly in the size of leaf, and the proneness to rush up to flower. Plant in an open position in rich soil. When seed-stems are produced in the summer, cut a portion of the plants over entirely, and as soon as they have thrown a fresh crop of leaves, cut over the remainder, and thus insure a constant supply.

Salsify and Scorzonera.—Sow a few rows of each of these rich, deeply-dug soil; the variety of Salsify known as the Giant is preferable. The land should be prepared as for Carrots, Parsnips, &c., and free from recently-applied manure, the rows being 15 to 18 inches apart, and the plants thinned early to 8 inches apart in the rows. If sown too early flower-stems are likely to be produced, more especially in the case of Scorzonera.

Main Crop and Late Broccoli.—These should now be sown preferably in shallow drills on fairly rich soil. Narrow borders by the side of kitchen garden paths are sometimes chosen, being convenient for affording protection from birds, and handy for drawing out the plants when required. They should be sown in an open sunny site, and the seed may be sown in drills 9 or 10 inches apart, taking especial care to sow thinly. Some good kinds for succession are Veitch's Self-Protecting Autumn, Sutton's Michaelmas White, Snow's Superb Winter White, Sutton's Vanguard, Christmas White, Early Penzance, Veitch's Main Crop, Sutton's Safeguard, Veitch's Model, and Sutton's Late Queen. The plants must not be allowed to remain in the seed-beds long enough to become drawn and leggy. If the land is not likely to be ready for the reception of the plants when they are large enough to be planted out, the best plan will be to prick-out a sufficient quantity of each variety on a properly prepared border 5 or 6 inches apart each way, which will give each plant room to develop, and will somewhat check their growth for a time, and tend to keep them dwarf and sturdy.

Kidney Beans.—A few rows of dwarf Kidney Beans of the Ne Plus Ultra type may be sown on a warm and sheltered border, where coverings can be applied for a time if necessary.

"FARM AND GARDEN INSECTS."—Under this title, a useful little book has been prepared by Dr. SOMERVILLE, which, while partly devoted to the anatomy of insects in general, deals also with many well-known pests particularly, and gives brief directions for coping with them. The volume contains many illustrations, and it may be commended for carrying in the pocket on occasions where more ambitious works are not portable. (The publishers are Messrs. MACMILLAN & Co., London and New York.)

EDITORIAL NOTICES.

ADVERTISEMENTS should be sent to the PUBLISHER.

Letters for Publication, as well as specimens and plants for naming, should be addressed to the EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be written on ONE SIDE ONLY of the PAPER, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith. The Editor does not undertake to pay for any contributions, or to return unused communications or illustrations, unless by special arrangement.

Illustrations.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, &c.; but he cannot be responsible for loss or injury.

Local News.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

Newspapers.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

APPOINTMENTS FOR THE ENSUING WEEK.

SATURDAY, APRIL 24—Royal Botanic Society's Meeting.

SALES.

WEDNESDAY, APRIL 21
 Border Plants and Bulbs, Lilacs, Roses, Shrubs, Trees, &c., at Mr. Stevens' Rooms.
 Japanese Lilacs, Lilium Martini, Azaleas, Palms, Ferns, and Carnations, at Protheroe and Morris' Rooms.

FRIDAY, APRIL 23
 Orchids from Messrs. F. Sander & Co., at Protheroe & Morris' Rooms.

AVERAGE TEMPERATURE for the ensuing week, deduced from Observations of Forty three years, at Chiswick.—49°.

ACTUAL TEMPERATURES —
 LONDON.—April 15 (6 P.M.): Max., 55° to 60°; Min., 47°.
 PROTHEROE.—April 15 (6 P.M.): Max., 55°; York; Min., 42°, Aberdeen.

THE debate in the House of Commons on Friday last relating to the earlier opening of Kew Gardens was not only amusing, but rather more pertinent than usual, inasmuch as there were among the speakers some like Mr. CHAMBERLAIN and Mr. HERBERT GLADSTONE, who really know something of the work that is done at Kew, and of the means that may be taken to facilitate or to impede it, as the case may be. The majority of the speakers, as of those who make the demand for earlier opening in general, are either persons whose claims to consideration are not to be considered in comparison with the inconvenience that would arise from the concession of their demands, or they are persons who are not aware of the privileges that are already accorded to any one visiting the gardens for purposes other than mere sight-seeing or recreation.

A great deal has been done in the way of popularising Kew of late years, restrictions have been removed, and much more labour and money have been expended on decorative gardening than was formerly the case, and that this is highly appreciated by the public there can be no manner of doubt. The exclamations of the visitors to No. 4 house, which is always attractive, and just now specially so, are only comparable to the ejaculations heard at a fireworks display! Equally remarkable is it to find that many of the visitors, or some of the

visitors' friends, have "got that at home," the "that" being something not improbably almost unique! It is most desirable that this description of spectator, which forms numerically the largest class of visitors to Kew, should have ample facilities for seeing everything there is to see, and that aid should be given them by the free use of descriptive labels, and where possible by the adoption of a system of "personally-conducted visits."

But whilst every reasonable facility should be accorded to the sight-seer, it is clear that the more serious interests of the garden and its administrators must not be sacrificed for any such purpose. Time must be found for sweeping and garnishing, operations which, as every proprietor of a greenhouse knows, cannot adequately be performed in the presence of visitors.

Another point which has not been sufficiently considered, is the convenience of the administrators. The daily work of inspection, supervision, and administration generally, must be very heavy, and a large portion of this must, of necessity, be done before the entrance of the public renders it more or less impracticable. Are the administrators to be expected to take lanterns and accompany the night watchmen on their rounds? The only persons, indeed, who can judge whether earlier opening is practicable are the administrators and those responsible for the varied work of the garden. Everyone would be glad if they could see their way to an earlier opening, but in view of the facilities offered to gardeners and students generally, and especially in view of the extent and importance of the work done for the benefit of home and colonial cultivators, we should deprecate any change that would interfere in any degree with the scientific and practical work of the garden. Kew, it must always be remembered, is Kew, and not a park.

The practical nature and objects of the Kew establishment require, it would seem to be instilled into the minds of the residents who are anxious to see Kew a recreation-ground pure and simple, and who are even advocating in a local journal the introduction of "mail carts" and perambulators. As the writer proposes to proceed by degrees, we suppose, having obtained access for the mail carts, an agitation will be set up for the increase of the attractions by the performances of nigger minstrels and the like. By the time that that innovation is accomplished, the more strictly botanical part of Kew will have to be transferred into purer air in the country, far from the smoke and smells of Brentford, and "away from the crowd, the hum, the shock of men," and Kew can then be given up to perambulators and mail carts.

We take what follows from the columns of the *Times* :—

"Mr. BURNS (Battersea) appealed to the First Commissioner of Works to reconsider his decision not to open Kew Gardens to the public at an earlier hour than 12 o'clock. He hoped he should have the support of the Colonial Secretary in this matter, for he had seen parties of colonial visitors, Americans, Frenchmen, Germans, and others obliged, in consequence of the present regulations, either to kick their heels about on the river-side for perhaps a couple of hours or to go away and miss the opportunity of seeing the gardens altogether. It was absurd to suppose that, owing to pure 'cussedness' on the part of the permanent officials, who wished that the students should have privacy, this magnificent public institution should be closed until 12 o'clock in the day.

Mr. CHAMBERLAIN did not see the object of the interruption. The hon. gentleman sat down, having just appealed to the right hon. gentleman the First Commissioner of Works to protest against the 'pigeahedness' of those who were administering Kew Gardens.

Mr. BURNS: Pure 'cussedness!'

Mr. CHAMBERLAIN: 'Pure cussedness!' That was, perhaps, worse. Cussedness implies some control, whereas

a man might be born pig-headed. But he rose, in answer to the hon. gentleman's appeal, to join him in his attack upon the administration of Kew Gardens. The hon. gentleman had appealed to him as Colonial Secretary only, but he might have appealed to him as a very enthusiastic horticulturist, for he could certainly say that to him gardening was even a greater delight than politics themselves. The hon. member had failed to realise the peculiar position in which Kew Gardens stood; he treated them as if they existed for the benefit of the inhabitants of Kew, that was not the proper matter or claim; the gardens had upon the support of the Committee, but it was as a great scientific establishment. We were very justly proud of the gardens. He had seen almost every botanical garden in Europe, and he thought he was right in saying there was nothing in the whole of Europe which would hold the attention of the inhabitants of Kew as to the decoration of the gardens, but as to their scientific value. The hon. gentleman said that French and German people had to wait outside the gates, having got there before the time of opening; and he complained of the "cussedness" of officials because they did not open the gates before the proper time. That was really a little too absurd. If you went at 11 o'clock to an institution in France which opened at 12 o'clock it was his pigeahedness, and not the pigeahedness of the officials, which kept the doors closed. There was nothing peculiar in Kew Gardens opening at 12 o'clock. A great number of great museums opened at 12 o'clock, and some did not open until late in the afternoon. It was, of course, the business of Frenchmen and Germans to be at Kew Gardens at the proper time, and not before. But the point was, that if they opened the gardens at the time his hon. friend desired they should be opened, they would most materially interfere with their value as a scientific institution, and they would interfere with the work of the officials. In his capacity as Colonial Secretary he was continually applying to Kew in reference to the cultivation of all kinds of plants, and he did not hesitate to say that some of the great improvements made in the garden since the time of the West India Islands were due almost entirely to the advice and assistance received from the Kew officials—the gentleman whom the hon. member had described as pigeahed or cussed. It was not fair to attack public servants who were so performing their duty, and it was not fair to throw on them, for the benefit of children and nursery-maids, and Frenchmen and Germans, duties which would detract from their value as advisers of the colonial and other officers of the Government who might from time to time have occasion to apply for their services. He thought that, on consideration, the Committee would see that the public were not entirely provided for when the gardens were opened, as now, every weekday at 12 o'clock, and on Sunday afternoon, which was, after all, the most popular time, and when Kew was visited by the largest number of people.

Mr. GLADSTONE (Leeds, W.) said that his hon. friend (Mr. Burns) was fully justified in bringing this point before the notice of the Committee. It was desirable to extend the privilege of visiting Kew Gardens to as many people as possible; but the question was not so simple as his hon. friend proposed. Of course, sometimes, when pressure of this kind was brought to bear on public offices, a way was found to meet the suggestions that were made. But as to this matter, he had gone into it fully when he was First Commissioner of Works, and he found that when the gardens were opened on Bank Holidays at an earlier hour than 12, comparatively few people availed themselves of the privilege. He did not think that sufficient advantage would result from this arrangement to justify the extra cost which would be involved. But it might be possible to give more facilities to societies and students to visit the gardens under special permission.

Mr. AKERS-DOUGLAS said that there could be no doubt that arrangements might be made in that direction. He had made special inquiries, and he found that anyone wishing to visit the gardens early for scientific purposes was never refused admission. If institutions, such as the hon. member for Battersea had mentioned, wished for the purposes of study to visit the gardens he was sure that they would be admitted, and more than that, he would take care that they should be admitted.

Mr. BURNS said that he was much obliged for the courteous and valuable concession which the right hon. gentleman had made.

Mr. AKERS-DOUGLAS.—It is not a concession, because the privilege is granted already.

A CHRYSANTHEMUM AS GROWN IN JAPAN.

Our illustration (fig. 85) represents an example of Japanese culture which would not be readily excelled by our best cultivators of the Chrysanthemum. In form it does not appear to differ from those we are accustomed to observe at the big November shows in this country, although in size and in the number of the flowers it greatly exceeds them. The height of the specimen measured 6 feet 6 inches; width, 9 feet 9 inches in one direction, and 13 feet in the other. Each stem carried a single flower, of which there were 800, and the plant possessed only one stem. It was a seedling variety raised by Mr. H. FOUKUBA, and grown in Tokio in 1896 by Mr. ITOHAWA, under the directions of the raiser.

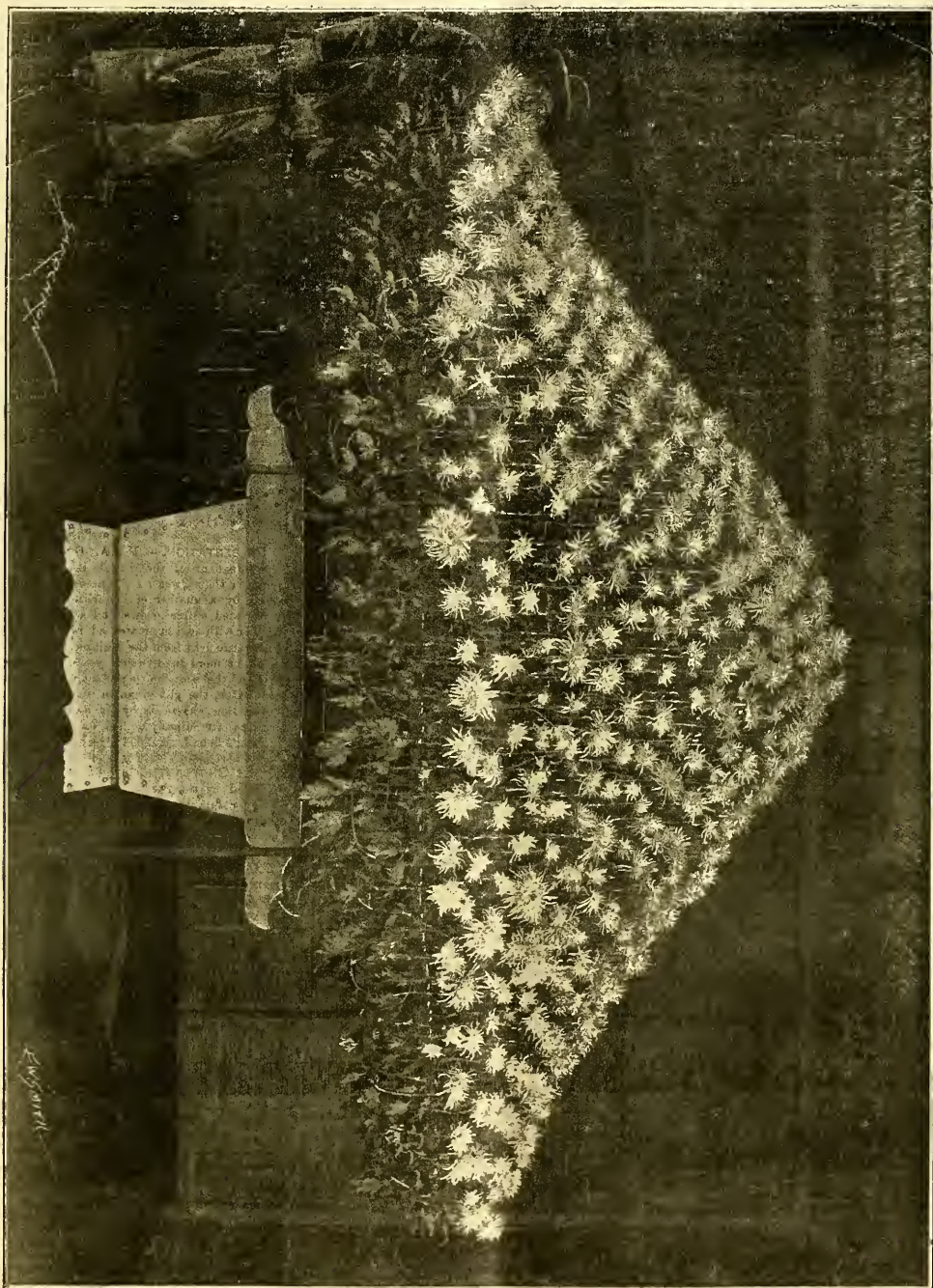


FIG. 56.—A CHRYSANTHEMUM AS GROWN IN JAPAN. (SEE P. 254.)

LINNEAN SOCIETY.—The next meeting of this society will be held on Thursday, April 15, at 8 p.m. precisely, when the following papers will be read:—Mr. H. FISHER, "Preliminary observations upon plants collected during two years' residence in Franz Josef Land." Mr. A. O. WALKER, "On some new Irish Crustacea." Messrs. W. & G. S. WEST, "On *Desmidea* from Singapore."

THE FLORAL COMMITTEE.—The subjoined letter raises a question which has often been mooted, but never been satisfactorily arranged. No better or more impartial tribunal could be found to adjudicate upon florists' flowers, flowers of a purely decorative character, and flowers wherein commercial considerations are directly involved, than the Floral Committee. It is otherwise with new, or comparatively new plants, or old plants of botanical interest not yet widely distributed in commerce, or among amateurs. These receive but scanty attention on the part of the committee, or perhaps may be passed over entirely. The *Chionodoxa* was a flagrant instance, but that is now ancient history. A more recent case, when a plant of the original wild Chinese Primrose, a plant one would think of the greatest historical interest to lovers of plants, was passed over by the Floral Committee without any public award being made, though it is true, for the credit of the Society, that the omission was afterwards remedied. The "Botanical Certificate," instead of being looked on as something to be given to some plant not sufficiently attractive to merit a First-class Certificate, should be granted to plants of historical and botanical interest, and should be treated as of at least equal importance, in its way, as a First-class Certificate; or rather, considering the freedom with which the latter are awarded, as of much greater value. At the Orchid Committee a Botanical Certificate is often granted to some plant the "botanical" importance of which the great majority of the voters are, we fear, not in a position to appreciate. The only reason for the bestowal of this award is that the plant is not of a decorative character!

"*TULIPA KAUFMANNIANA*.—I do not know on what grounds the Floral Committee of the Royal Horticultural Society gave a First-class Certificate to a plant shown under this name by Messrs. Hart & Mosses, Wallace at the last meeting of the society. If your figure 72 is a correct representation of it, it is not at all the best form of this beautiful plant, which I have grown for at least eighteen years, and which I have more than once exhibited at the Society's meetings without any notice being taken of it. Your remark on p. 217 as to the astonishing difference between the plant now shown and the plant figured by Regel, confirms me in this impression, as does your description of its colour, which you say is variable from pale pink to pale rose-purple. In the *Journal of the Royal Horticultural Society* for 1879, vol. v., p. 205, will be found some "Notes on the Genus Tulipa," in which I spoke of the plant as follows:—"This very lovely Tulip is one of the earliest in flower, and at the same time one of the most beautiful of its section. The flower is developed in advance of the leaves, which, at the time of flowering, are quite short, and of a pale glaucous green. The colour is bright carmine outside, passes on the outer segments, which are bordered with white. The inside is nearly white, with a bright yellow centre, and a band of carmine above this. The flower opens quite flat in the sun, and is about 3 inches in diameter. A Tulip resembling this in all but colour flowered at the same time, and is probably a variety of it. It is deep Primrose-yellow, with golden centre and anthers, and if not already named by Dr. Regel, may be called after him." I lost the first form of the plant shortly afterwards, but have since retained and increased the other yellow form, both by seed and offsets, and have given it to many friends, so that it should by now be a well-known plant. Though I have often remarked the general tendency of wild Tulips to alter their characters in cultivation, this plant has remained comparatively constant during eighteen years, and preserves its colour and extreme earliness, though somewhat larger in size. I have not the slightest reason to object to its receiving a First-class Certificate because it is an old plant, but I do object to an inferior form receiving one when the best form has been ignored. The Floral Committee of the Society at present constituted is not a competent tribunal to judge of the merits of many plants brought before it. I will remember a leading member of the committee telling me many years ago when I first exhibited *Chionodoxa Lucida*, that it was a trumpery plant, no better than, if as good as, the common wood Hyacinth. Last month I sent a plant which (as the credit of producing it is not due to myself, but to my friend MAX LEICHTLIN) I may say was a triumph of good cultivation, and which has, so far as I can learn, never been shown in such good condition before, namely, *Lilium Thompsonianum*, to the committee, who ignored it, for what reason I cannot say, for though an old plant, it is, when

properly grown, a very beautiful one. The fact seems to be, that the number of purely florist flowers is now so great, and the knowledge of a majority of the members of the Floral Committee so much confined to them, that it is just as impossible for them to judge the horticultural qualities of a botanical species, as it would be ridiculous for me to judge the qualities of a *Polargonium* or a *Cineraria*. I would therefore suggest to the council that the committee should be divided into two sections, one for florist's flowers, and one for plants which have not as yet been improved or hybridised to such an extent that their original characters, &c., have been lost. H. J. BLUES, *Coltborne Park, Gloucestershire.*"

KEW.—In No. 1 house, devoted principally to *Aroids*, *Amberstia nobilis* is now in bloom. Unfortunately the flowers are at the top of the tree, where their beauty and singularity cannot be seen. The grass in places is converted into a perfect sea of Daffodils—an exciting display. In No. 4, the show-house, *Rhododendron Sesterianum* is in full bloom, and quantities of a very effective early-flowering form known as *Rosy Bell*. *Azaleas*, *Lilacs*, *Cytisus*, *Hippocratus*, *Spiraea Van Houtte*, *Cineraria cruenta*, and countless other things combine to render the house attractive. The Alpine-house, No. 24, is perhaps less interesting than usual, but there are numerous *Muscari*, *Fritzes*, *Primulas*, *Auriculas*, and such like to charm the visitor. The rockery is, as usual, full of interest; a patch of *Primula rosea*, planted in a marshy nook, is very effective. Kew will form a delightful place for a visit in the Easter holidays.

YORKSHIRE NATURALIST'S UNION.—The excursions and meetings that are arranged to take place this year are:—April 19 (Easter Monday), Boston Spa; Thursday, May 13, Skeltonthorpe; June 7 (Whit Monday), Cothelstone; July 8, Thursday, Scarborough and Heskess; August 2 (Bank Holiday), Monday, Everingham Park. The autumn meeting at Barneley for a Fungus Foray, the date will be fixed later; and the annual meeting will take place at Darlington on Wednesday, November 24. The honorary secretary is Mr. W. DENISON ROEBUCK, Sunny Bank, Leeds.

BOTANICAL MAGAZINE.—The plants of which coloured plates and descriptions are given in the April number are:—

Agave Hasledii.—A Mexican species, which flowered at Kew in 1895, and was described in our columns by Mr. BAKER, 1877, p. 653;—t. 7527.

Gentiana tibetica.—A robust Himalayan species, with broadly-lanceolate leaves and tufts of purplish flowers, with the short lobes of the corolla greenish-yellow, and thickly spotted. Kew. The plant grows in Chumbi, on the Tibetan border, between Sikkin and Bhotan, a region remarkable for its dry climate. Europeans are at present jealously excluded by the Tibetans, but native collectors have been employed successfully in obtaining seeds, &c., by DR. KING; t. 7528.

Tristania laurina, R. Br.—A shrub or low tree of the Myrtaceae family, with lanceolate leaves, paler on the under surface. Flowers numerous, small, yellow, in axillary clusters. Kew; t. 7529.

Gonyora tricolor, Rehb. f.—A species from Costa Rica, with ovoid, ribbed pseudo-bulbs, broadly ovate lanceolate leaves, and racemes of reddish spotted flowers. Kew; t. 7530.

Sarcocolla Smithii.—A noble herbaceous plant, native of South Chile and Fuegia, and hardy at Kew, where it attained in an open border a height of 3 feet. The stems are fistular; the leaves are stalked, ovate, oblong, covered with anaceous hairs, and bearing terminal corymbs of white flower-heads, each about 1 inch across.

THE SURVEYORS' INSTITUTION.—The next ordinary general meeting will be held on Monday, April 26, when a paper will be read by Mr. W. H. PAYNE (Barrister-at-Law), L.C.C., entitled "Local Authorities and the Building Laws." The chair to be taken at 8 o'clock. In consequence of the Easter holidays, the Institution premises will be closed from Thursday evening, the 15th inst., to Wednesday morning, the 21st inst.

ARBOR-DAY.—When, in our last issue, we alluded to the wasted opportunities afforded by bare walls,

we were not aware that a gentleman at Hextable near Swanley had put our precepts into practice by presenting to each one of sixty approved cottage-residents a Vine. The Vines supplied by Messrs. BUNYARD were the Sweetwater. The donor, who prefers to remain anonymous, has offered four prizes of £1, 15s., 10s., and 5s., to the cottagers who produce the harvest amount of ripe fruit. Six Vines of the same description were presented to the six "Homes for Boys."

GARDENERS' ROYAL BRANCH INSTITUTION (Worcester and District Council).—By permission of EARL BRITCHEAM, the president of the branch, the gardens at Madresfield Court, his lordship's Worcestershire residence, will be thrown open to the public on Thursday, April 22 next. The charges for admission are from 2 till 5 o'clock, one shilling; and from 5 till 7 o'clock, sixpence, the proceeds being given to the above excellent institution. The spring flowers at Madresfield Court will be in perfection about the above date.

THE MIDLAND DAHLIA SOCIETY AT WELLINGBOROUGH.—This Society, which has grown out of a Dahlia exhibition held here in September last, was inaugurated on Friday, the 9th inst., when Mr. R. DEAN delivered a lecture on the Dahlia, its history, types, cultivation, &c., before a considerable and interested audience. The chair was occupied by Mr. T. PENDBER, the President of the Society, who announced that the prospects of the Society were most encouraging, and that there was every probability that an excellent display of Dahlias would be held on September 11 next.

PRESENTATION.—Mr. A. GRAHAM, the late superintendent of the Royal Park and Gardens, Hampton Court, was on Wednesday, 7th inst., presented by a number of his friends with a pair of silver-plated *strucé* dishes and a purse of money, together with an illuminated address on the occasion of his retirement from the position he has held for a period of more than twenty years. Advantage was taken of the occasion to present to Mrs. GRAHAM a gold watch, the gift of an anonymous donor. The presentation was made by Mr. R. M. BONIWELL, and Mr. GRAHAM suitably replied on his own and Mrs. GRAHAM's behalf.

"**LE CHRYSANTHEME.**"—This little periodical, published by the French National Chrysanthemum Society, continues to make its appearance regularly every month, although it was originally intended to be a quarterly. The April number is just to hand, and among its contents we notice an able article by Mr. COUILLARD on the subject of the alphabetical arrangement of Chrysanthemum names, in which he, as registrar of the Society, takes a particular interest. The secretary's report, some remarks in reply to Mr. FALZIV's complaint at the use of English technical terms when good French ones already exist, and a first instalment of the report of the deputation of the English National Chrysanthemum Society to the foreign shows, also appear.

READING GARDENERS' ASSOCIATION.—The closing meeting of the spring session of the Reading Gardeners' Association was held on Monday evening, the 12th inst., in the Club Room, British Workman, when Mr. C. B. STEVENS presided over a large attendance of members. The paper for the evening was "Zonal Palargoniums," by Mr. H. SHOESMITH, Claremont Nursery, Woking. The paper was of an exceedingly practical character, being full of plain cultural notes, and was followed by the members with the closest attention. In introducing his subject, the lecturer said he had selected one that had been somewhat neglected at horticultural meetings, although it was not a new one. The lecture touched upon the propagation of the plants, the kind of soil necessary to obtaining good bloom, the propriety of using pots of comparatively small sizes for ordinary decorative purposes, the need of firm potting, winter treatment, diseases to which the zonal Palargonium is liable; and giving, at the conclusion, a list

of varieties, of which we may mention the following:—For general culture, single varieties: A. F. Wootton, Casiope, Duchess of York, Dr. Rawson, E. Bidwell, Enid, Geo. Gordon, Kitty, Lord Farrer, Madame Jules Christin, M. Calvat, Mr. Owen Thomas, Mrs. Hall, Olivia, O. W. Holmes, Pink Domino, Phyllis, Rev. Bartuun, Royal Purple, Trilby, T. W. Lawton, Wilhelmina, Sour. de S. B. Miller, W. Beahy, Virginia. Double varieties: Annie Henriot, Beauté Poitevine, Gustave Emich, Golden Gate, Joyful, Madame Charlotte, Raspail Improved, Hermoine. For winter flowering, the following are the best:—Singles: Albion, Amy Amphlett, Chas. Mason, Edith Strachan, Eoid, Kitty, Mille. Trine, Olivia, Pink Domino, Phocina, Rosy Morn, Stella Massey, Volcaia, W. Beahy. Doubles: Double H. Jacoby, Gustave Emich, Hermoine, Raspail Improved, Beauté Poitevine. Many questions were asked, and an animated discussion took place.

INDIAN COTTONS.—Mr. T. H. MIDDLETON has reprinted from the *Agricultural Ledger* (Calcutta) a valuable article on the cultivated Cottons of India. Mr. MIDDLETON has cultivated some sixty or seventy varieties from different parts of India, and compared them when growing. In the pamphlet before us he describes most of the varieties. Mr. MIDDLETON follows the classification of DONARO, but considers that the Italian botanist made too many species. Mr. MIDDLETON himself accepts G. herbaceum, G. arboreum (in hybrids only), G. roseum, G. indicum, and G. neglectum; G. indicum being a marked variety of herbaceum, and G. neglectum a hybrid. Of G. Stockii, described by Dr. MASTERS, and considered by him as likely to be the origin of G. herbaceum, Mr. MIDDLETON says, "I believe its nearest relative to be G. herbaceum."

FLORA OF THE ALPS.—Mr. J. C. NIMMO announces the publication, in eight monthly parts, of Mr. ALFRED BENNETT'S *Flora of the Alps*—a useful book for those intending to visit Switzerland.

NEW DWARF LANTANAS.—Having succeeded in fixing the habit of a number of dwarf varieties of Lantana, M. BRUNANT, Poitiers, is bringing into commerce the following:—Fabiola, rose-coloured; Stahl, large flower, of an orange colour, which takes on a reddish tinge with age; Mnsé, very large flower, wavy margin, a butter-yellow, the centre shining yellow, and later of a sunset tint, edged with rose; Cima is valerian-red; Fournaise, flowers and corymb large, and the colour a fiery Nasturtium-red. These varieties should form capital material for planting beds in warm sunny localities.

FUCHSIAS.—To Messrs. CANNELL & SONS we are indebted for the inspection of specimens of a new Fuchsia, called "Addington," said to be a hybrid between *F. fulgens* and *F. splendens* var. *cordifolia*. The plant is evidently very free flowering, and softly pubescent on the surface. The leaves are shortly stalked, ovate-lanceolate. The flowers are very numerous, on drooping pedicels, each about 2 cent. long (about $\frac{3}{4}$ inch). The ovary is slender, 1 cent. long; the calyx tube 3 cent. long (say $1\frac{1}{2}$ inch), cylindrical, rose-red. The lobes of the limb are reflexed, 12 mill. (about $\frac{1}{2}$ inch) long, reflexed, lanceolate. The petals are deep rose coloured, ovate-rounchid, about the length of the calyx-lobes. It would apparently make a first-rate variety for growing on the rafters of a greenhouse.

GRAPES FROM THE CAPE.—We have this week to note the arrival of the steamships *Dunottar Castle* and *Trojan*, from the Cape of Good Hope, the former with 470 boxes of white, and 40 boxes of black Grapes; the latter with 383 boxes of white Grapes. As to condition, the reporter says:—"The consignments of the *Dunottar Castle* turned out in good condition, particularly the black Grapes, and fair prices were realised. The consignments per the *Trojan* turned out in fair condition, and realised fair prices."

STOCK-TAKING: MARCH.—On the 31st ult. the national stock-taking for the year was brought to a close, and on the following day the revenue account was issued, and may be given in brief—so far as we are concerned here—as follows:—Total revenue, £112,198,517, for the year 1896, £109,339,946; a difference in favour of the year just ended, £2,858,571. The figures are astounding, and as to the surplus, perhaps the Chancellor of the Exchequer is a happy man. The increase in duty-paying articles of food and drink is very noticeable, but the Board of Trade returns, month by month, have prepared us for all this, and those for the month just ended, and now to be noticed, afford ample verification of the statement. Now, as to the imports for March: these amount to £40,655,114, against £38,366,750—an increase of £2,288,364. In the various sections, only three "decreases" are noted, i.e., of £92,515 in "animals, living, for food;" of £104,315 in "oils," and of £15,852 in "the parcel post." All classes of food and drink are in excess, with the exception of Wheat, which shows an enhanced value for a reduced quantity imported. Sugar is also in the minus section. Raw materials for textiles have a large increase to place on record here and there; though cotton from the United States showed a large falling off. Our usual extract from the "summary table" is as follows:—

IMPORTS.	1896.	1897.	Difference.
Total value ...	£ 38,366,750	£ 40,655,114	+2,288,364
(A.) Articles of food and drink—duty free ...	12,132,204	12,547,692	+415,488
(B.) Articles of food and drink—dutiable ...	2,188,624	2,353,448	+164,824
Raw materials for textile manufactures ...	7,934,103	7,587,037	-447,066
Raw materials for sundry industries and manufactures ...	3,330,295	3,381,359	+51,064
(A.) Miscellaneous articles ...	1,226,724	1,412,210	+185,486
(B.) Parcel Post ...	96,718	74,866	-21,852

Yarns have moved up, also silk manufactures; and generally, in the hope of a good time coming, a goodly show of imports under this special section are placed on the list. The imports for the three months of the year are valued at £117,833,863, against £112,317,342 in the same period last year—an increase of £5,516,521. Respecting fruits, roots, and vegetables, we make the accompanying interesting extracts from the general mass of figures:—

IMPORTS.	1896.	1897.	Difference.
Fruits, raw:—			
Apples ... bush.	170,938	618,219	+447,271
Cherries ... ..	...	...	...
Plums	17	6	-11
Pears	124	1,793	+1,672
Grapes	2,430	3,205	+775
Unenumerated ...	52,263	58,965	+5,702
Onions	293,705	301,052	+7,347
Potatoes ... cwt.	31,559	43,208	17,644
Vegetables, raw, unenumerated ... value	£115,141	£108,432	-6,709

One remarkable feature in this table is the great supply of Apples, the estimated value of which is £152,798, and for the three months' supply the value is placed at £388,850. Our farmer friends and others might make a note of this.

THE EXPORTS

for the month are placed at £21,647,269, as against £20,449,623 for the same period last year—an increase of £1,197,646. The two sections showing a reduction are yarns and textile fabrics (£265,805), and apparel and articles of personal use (£39,631). However satisfactory this may be when compared with last month's report, still on the three months

there are some £2,092,022 to wipe off. Machinery for the manufacture of textile goods has gone off well to Japan, India, and Germany, and there is an increase of pig-iron to the Continent. Strange to note, as in February, there is an increase in textiles to Turkey; and the output of railway materials—locomotives, rails, and rolling stock increased. "Metall manufactures" went up by £428,000, and telegraph wire shows an excess of £118,000. Mining machinery has little to record. Coal to the Continent went up £187,000, and wool by £147,000.

SCOTTISH HORTICULTURAL ASSOCIATION.

A large number of members of the above society met on Wednesday evening, April 8, at Dowell's Rooms, George Street, Edinburgh, Mr. TODD in the chair, to listen to Mr. A. CHALMERS' interesting paper, illustrated by lantern-slides, of "A Trip through the Bulb-farms of Holland." The reader vividly and instructively put before his audience the methods of propagation, planting, and the chief points in their cultivation. A hearty vote of thanks was accorded Mr. A. CHALMERS. Some greenhouse hybrid Rhododendrons were exhibited by Mr. McMILLAN, Trinity Cottage, Edinburgh, the flowers of which were large, and of good substance, with prettily undulated edges.

PRESENTATION TO MR. JAMES DOUGLAS.

On the occasion of the luncheon partaken of by the members and friends of the National Carnation and Picotee, and the National Auricula and Primula Societies of the South of England, on Tuesday last, at the Hotel Windsor, Victoria Street, Westminster, Mr. JAMES DOUGLAS, who has for a great number of years been the secretary of each, was presented with a clock and a purse of 30 guineas on his resignation of his office.

PUBLICATIONS RECEIVED.

—*The Musical Home* (SIMPKIN, MARSHALL, HAMILTON, KENT & Co., London) contains a good selection of music and songs, classical and popular, some for advanced musicians, others for children. —*The World's Musical Life* (HORACE MARSHALL & SON, Temple Avenue, E.C.) contains no scores (such as will make the first-named journal welcome to every musical home), but is devoted to notes and chat on music and musical matters.—*Offertenblatt der "Blumenkunst"* (Erfurt), an illustrated publication devoted to mounting and arranging flowers for bouquets, and every other sort of decorative purpose.—*Les Animaux Utiles et Nuisibles à l'Horticulture* (*Insectes exceptés*), par A. LABEYRIER. Another of that useful series of horticultural handbooks published by OCTAVE DOIS, Paris, in the Bibliothèque d'Horticulture et de Jardinage.—*The Amateur Photographer*, April 2. The letterpress and illustrations are excellent and varied.—*Agricultural Economist*, April 1, devotes a few pages to gardening, and contains much interesting matter.—*Pharmaceutical Journal*.—*The Canadian Horticulturist* (Grimsby, Ontario) for March.—*Bulletin of the Botanical Department, Jamaica*, December, 1896. This includes the annual report of the Director, Mr. W. FAWCETT, and the index to vol. iii. In the Educational Department, the industrial school is making good progress, and would advance further were the available premises larger. For the Herbarium, a specimen of *Jamaican Satia Wood* is much desired. It is said that "judging from the leaf only, it appears to be allied to *Amyris* and to *Xanthoxylum*, but it is necessary to have the flowers and seed-vessels to determine it exactly."—*Annual Report for 1896 from the Royal Botanic Gardens, Trinidad*, by J. H. HART, Superintendent. The year's progress has been, on the whole, satisfactory, and we note, among minor items of news, that, from twelve seeds of the double *Cocca-ut* Palm brought from the Seychelles rather more than a year ago, "two have developed a single leaf, and five others have commenced to show above ground."—*The National Nurseriesman*, April (Rochester, N. Y.).—*Annual Report of the Secretary for Agriculture, Nova Scotia*, records a prosperous season; contains notes from various agricultural societies, and articles on subjects relevant to the title.—A

Report upon the Grasses and Forest Plants of the Rocky Mountain Region, by P. A. RYDBERG and C. L. SHEAR (U. S. Department of Agriculture). A revision of the results of three months' collection and study in certain parts of Nebraska, Idaho, Montana, Utah, and Colorado.—*The American Florist*, March 20.—*Dictionnaire Pratique d'Horticulture et de Jardinage*. This, the 59th Livraison, includes the beginning of the notes upon ROSA.—*L'Horticulture Potvine*. This is a catalogue from the firm of BRUNAT, of Poitiers (Vienne), and includes pictures and descriptions of the plants and tools offered.—*Société Nationale d'Horticulture de France*. Liste générale des Membres de la Société, including a brief review of its existence (since 1826), notes on affiliated and corresponding societies, &c.—*Report on Natal Botanic Gardens* (Durban Botanic Society), by J. MEDLEY WOOD, Curator. This, the fifteenth annual report, mentions good work which might have been even better with more workmen, and a larger field for operations.—*Colonial Herbarium* (Durban). Report for 1896, by J. M. WOOD, Curator. The number of specimens in the Herbarium has been increased during 1896 by more than 1000 additions, and further development is continually expected.—*Wiener Illustrirte Garten-Zeitung*, March.—*Bulletino della R. Società Toscana di Orlicoltura*, March.

THE SPECIES OF THUYA.

(Continued from p. 214.)

THUYA OCCIDENTALIS VAR. Plicata.—This is the plant commonly called, for brevity sake, Thuya plicata. The true Thuya plicata, as we have attempted to show, is the fine species now generally called T. gigantea. There are several seedling forms of T. occidentalis, plicata, in gardens, such as cristata, and it passes gradually into T. occidentalis var. Wareana, but almost all of these varieties show the flattened head-like foliage and large glands of T. occidentalis. In some of the forms the dense masses of branches, the branch systems as they are called now-a-days, are concave and somewhat spirally curved, like the inner surface of the thread of a screw. The varied sweeps and curves of these screw-like scooped branches are very beautiful. One of the varieties of Cupressus Lawsoniana, that introduced by the late Maurice Young, has a similar appearance, and doubtless a similar disposition is not uncommon among seedling Conifers. In colour the foliage of T. occidentalis var. plicata usually very deep green, and the central and lateral leaves are very regular and nearly equal in size. The cones, as may be seen from our illustration (fig. 86), are quite similar to those of T. occidentalis.

By some, as we have said, this form is considered to be T. plicata, Don, and is registered as a native of North-west America and East Siberia. This error as to the geographical distribution has arisen from the entanglement in the nomenclature not only of the plants, but of those who stood god-fathers for them, viz., James Donn and David Don. The true plicata is that now generally grown as gigantea, with a few other synonyms which it is well to forget or put aside as soon as possible. There is no Arbor vite or Thuya in Eastern Siberia, unless it be Thuya (Biota) orientalis.

Among the very numerous specimens of occidentalis-plicata that have passed through our hands of late years, there has not been one that could be referred to the Pacific species, but all to T. occidentalis.

Among the other very numerous varieties of T. occidentalis, mention must be made of T. WAREANA, Hort. For us this is a form of T. occidentalis, very closely allied indeed to T. occidentalis plicata, but usually more robust, and with larger foliage. Specimens in our herbarium correspond very closely with the native form of T. occidentalis as gathered at Niagara. The original, we are told by Gordon, *Pinetum*, ed. 2, 409, was raised by Ware, of Coventry.

Another Wareana, that of Booth's *Catalogue*, was probably a form of Thuya § Biota orientalis, and called also under the names tatarica and sibirica. This Wareana of Booth we do not meet with in our collections.

THUYA JAPONICA (MAXIMOWICZ).—This is the Japanese representative of the N.W. American T.

plicata (gigantea, Hort.), and if it did not come from such a distant region, it would, no doubt, be considered as specifically identical with it. It is the Thuya, or Thuiopsis Standishii of gardens. We have only seen young plants in the nurseries, and herbarium specimens. It is quite likely that more mature specimens would show greater differences than are now apparent; nevertheless, even now, some differences are conspicuous. As compared with plicata (gigantea, Hort.), japonica has its branches of a yellowish colour, less flattened; in fact, they are convex, and remind one of whip-cord. The leaves are less glandular, not so flattened as in gigantea, Hort., oblong-acute, or some-

grouped. We may spare the reader the interminable synonyms and references to other forms and varieties.

1. T. OCCIDENTALIS, LINNÆUS
var. plicata = T. plicata of gardens
var. Wareana,
and very many more.
2. T. Plicata, D. DON, in Lambert, Pinus
= T. gigantea, Nuttall, and of gardens.
= T. plicata, James Donn (without description).
3. T. JAPONICA, Maximowicz
= T. Standishii, Hort.

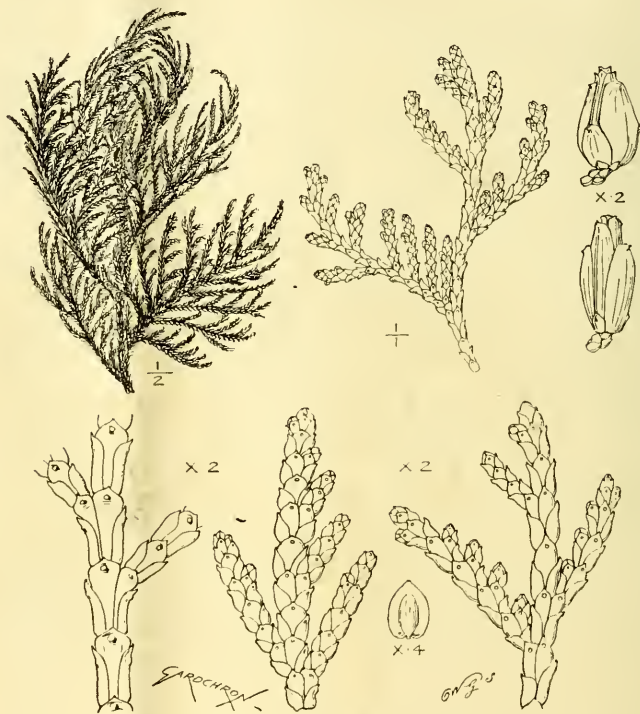


FIG. 86.—THUYA OCCIDENTALIS VAR. Plicata.

Showing branchlets, foliage, cones, and seed.

what thickened at the apex, and with less tendency to acumination, often with a central ridge or mid-rib. The cones are very similar to those of gigantea, about 10 mill. long by 5 broad, generally shorter and thicker than those of plicata (gigantea, Hort.). When the eye becomes accustomed to the plant, there is, in fact, rarely any difficulty in identifying it, as, in addition to the marks above-mentioned, it has an indescribable but very perceptible difference in appearance or facies. Its branchlets turn colour and drop off in the autumn. We have had it for several years in cultivation, and have found it perfectly hardy even in the most severe winters.

This was one of Fortune's discoveries in Japan, and the credit of introducing it to cultivation is attributable to the late Mr. Standish. It has been called Thuya Staudibii, Thuiopsis Standishii, and Thuya gigantea var. japonica, but must not be confounded with the form of T. orientalis, called japonica.

The species and varieties mentioned may be thus

HOME CORRESPONDENCE.

POTATO PRICES.—Whatever may be the nature of the Potato trade elsewhere, it seems to be in low water about Klong-ton-on-Thames, as a recent report of the proceedings of the Rural Board shows that some 15 tons of Stourbridge Glory had been seeking for a customer, and had, so far, been unable to find one. Perhaps a little light was let in upon the sample offered when, in reply to a suggestion that the lot be offered to the Board of Guardians, it was said that the Guardians purchased only of the best. If, therefore, the stock was not good enough for paupers, it was doubtless not good enough for the general public. This much, however, may have been but a touch of local humour. The fact seems to remain, that old Potatoes are a glut in the market, and whilst we heard so much last autumn of the ravages of the disease, there seems to have been left of sound tubers more than enough to satisfy all the nation's needs. Raisers' efforts of late have been so much directed to

the production of great cropping and disease-resisting varieties, that high table quality has been greatly ignored. Having got so many great producers, more attention might now be given to the production of meanness and better flavour, if it be possible to obtain these undoubted essentials to a good Potato, without materially undermining its constitution. It is certain that no present tendency to unprofitable prices in the Potato market will check planting or production. Immense breadths are being planted this season, and no doubt there will be to lift later an abundant crop. The blame of this result, if worthy of blame, must rest with the raisers of such wonderfully productive varieties. *A. D.*

BRAMLEY'S SEEDLING APPLE.—In your issue of the 10th inst., I notice your contributor, "C. H.,"

RICHARDIA ROSSII.—We note the remarks of your correspondent, "J. B. R.," in your issue for this week, but we think it is quite probable he is mistaken, and not Mr. Ross. We extract the following from a letter we have had from the latter gentleman:—"I believe this variety is now—in fact the superintendent of the Botanic Gardens declares the plant distinct from Elliottiana and Pentlandi, and a decided improvement. As I was the first to flower this variety, and the only holder of the stock, Mr. Chalvin, of the Botanic, has named the variety *Richardia Rossii*." According to the above, Mr. Ross evidently is thoroughly conversant with *R. Elliottiana*, although "J. B. R." perhaps did not know it. However, we hope to put this matter straight within a few months, when the plants will be flowering, as we hold all the stock in Europe. *W. L. Lewis & Co.*

actually distinct, for so many that are in commerce are but selections of popular varieties, the range of variety in Carrots is much less, though for all ordinary purposes it is ample. Whilst April 9 is not early for sowing Carrot seed, it is early for Beet, but distance from home compelled me to make all sowings at once. If the latter fall, happily I have seed in reserve for a later sowing. One great subject of interest in relation to vegetable trials is noting the different effects on varieties by diverse soils. That can be done admirably in the county of Surrey, where we have soil variation in abundance. *A. D.*

SPIRÆAS?—At the spring flower show of the Royal Caledonian Horticultural Society, held recently, an interesting feature of the exhibition was a large group of handsome, well-grown plants of so-called



FIG. 87.—*THUYA JAPONICA* (TANDISHI). (SEE P. 255.)

asserts that Bramley's Seedling Apple is merely a "local" variety, and will only fruit well in a certain district, the location being left entirely to the reader's imagination. I think it only fair that I should be allowed to reply to this, as it seriously affects the character of the Apple. I can submit testimonials, voluntarily given to yourself or other independent authority, describing how freely it fruits in different parts of England, Scotland, Ireland, and Wales; and if further proof is required, it is only necessary to refer to the account of the last October show of fruit at the Crystal Palace, under the auspices of the Royal Horticultural Society, where, out of eight or nine exhibitors for the special prizes given by the Society for this Apple, the 1st went to Chippenham, the 2nd to Newbury, and the 3rd to Reigate. I will also submit to you and your correspondent, if he will kindly send his name and address, a few fruits each of Bramley's Seedling Apple and Lane's Prince Albert for comparison in cooking, when I am sure the verdict of a fair trial will be in favour of Bramley's Seedling. *H. Merryweather.*

BEEETROOTS.—The rather extensive trial of Beet-root conducted in the Royal Horticultural Society's gardens at Chiswick last year, whilst held under unfavourable conditions as regarded the weather, showed that whilst few foreign stocks were worthy of cultivation, we had some home-grown stocks or selections that were really of first-rate quality. But in most cases the excessive autumn rains led to the production of abnormal leaf and root growth, the Chiswick soil, though very porous and quickly drying in hot weather, is yet comparatively rich, with ample moisture, which creates free growth. Desirous of seeing how far the varieties that were good at Chiswick—Cheltenham Greentop, Dell's Crinsum, Nutting's Dwarf Red, and Egyptian Turnip-rooted, with a few others of good reputation, would thrive on almost pure black sand, I have sown seeds at Englefield Green for trial purposes. I have also sown on the same plot seed of seven selected stocks of varieties of Carrots, for the soil has the reputation of turning out very handsome clean roots. But whilst we have many Beets, though really few that are

Spiræa. No. 44 in the prize schedule reads thus "Four *Spiræa*." No. 45, "Six do., in pots not exceeding six inches." What those who framed the schedule expected to obtain in competition, is not clear. All the three prizes, however, in No. 44 were awarded to different collections of *Astilbe japonica*, which, of course, is not a *Spiræa*; but so slowly does error die, that even yet it is so regarded by many gardeners. But that a desire exists among competitors, even at a flower show, to act fairly according to their lights, is a more hopeful sign of the future. In the next entry, No. 45, there seem to have been some qualms of conscience among the exhibitors that all was not right, for we now find exhibited several lots of the real "Simon pure" in *Spiræa astilboides*, and the judges awarded the prizes as follows:—1st, *Spiræa astilboides*; 2nd, (spurious) *Spiræa japonica*; 3rd, an intermediate form of the two former, called *compacta multilora*. In the case of the plant called *Spiræa astilboides*, there is, unfortunately, no lack of botanical authority in support of the name. The

great *Index Kewensis*, for example, refers it to *Spiraea Aruncus*. Notwithstanding all this, it is no more a *Spiraea* than the spurious *Spiraea japonica*. Any one who takes the trouble to examine a flower of this so-called *Spiraea astilboidea* will at once perceive that it belongs to Saxifragaceae, and not to Rosaceae, as does *Spiraea*, and that, in fact, it is an *Astilbe*. This has already been pointed out by M. Emile Lemoine, of Nancy, in an article which appeared in the *Gardener's Chronicle*, September 25, 1895, p. 358. M. Lemoine advocates the rejection of the name *Spiraea* as applied to this plant, and is inclined to adopt the rather incongruous name of *Astilbe astilboidea*. In a foot-note, however, he suggests that the name *Astilbe aruncoides* would be more in accordance with "facts and logic." This latter would be a most appropriate name; but why not simply transpose the name from *Spiraea astilboidea* into *Astilbe spiraeoides*, and thus make it also more in accordance with facts and logic? One can hardly imagine that so eminent an authority on the genus *Spiraea* as M. Knutovitz would be so liable to mistake an *Astilbe* for a *Spiraea* of the *Aruncus* group, and the true *Spiraea astilboidea* may yet be brought to light. Be this as it may, the fact remains, that the plant in ordinary cultivation under the name of *Spiraea aruncoides* is a Saxifragaceous plant, similar to *Astilbe*, and not Rosaceous, like, like *Spiraea*. R. Lindsay.

THE RENASCENCE OF THE HOLLYHOCK.—A good many signs alike in our gardens and at our great autumn shows tell us that this has not only begun, but is in more or less vigorous progress. A feeling of new hope and heart is abroad that the fungus pest has done its worst, and that the salvation of the Hollyhock may be found in cooler culture, invigorated constitution, and perhaps thicker skins or epidermis alike, of the leaves and stems of Hollyhocks. But be all this as it may, not a little towards a perfect renascence of the Hollyhock from weakness and disease has already been accomplished. This was abundantly evidenced from the perfectly clean and exceptionally vigorous plants, leaves and cuttings, sent by Mr. Forbes of Hawick, to illustrate a lecture I gave at the Royal Botanic Gardens on the Hollyhock on the 2nd of this month. The plants afforded admirable illustrations of the grafting of choicest named double Hollyhocks by various methods. I send you a sample of stems, cuttings, and of the size and vigour of the leaf and leafstalk, which speak for themselves as to their vigour and cleanliness. Mr. Forbes lost one of the finest collections in Britain in 1875; but instead of sitting down and bringing his hands in despair, he began immediately making a new collection, and surrounded it with such guarantees and sanitary measures as seems to have assured its safety. But our main interest in the present, and our hope for the future, lies in the fact that his fine collection is warranted clean, and that the most stringent rules are adopted to keep out infected stock. D. T. F.

EARLY-FLOWERING RHODODENDRONS IN CORNWALL.—The weather has been most favourable for early-flowering varieties. We had good trusses of R. Nobilemum open in November, and have rarely been without blooms since. There is nothing I think more beautiful amongst hard-flowering plants than one of these Rhododendrons in flower on a sunny morning in February. I enclose you a photo of a plant taken on February 24 last, the flowers of which are just beginning to fade—I think the variety is R. Broughtonianum, but I am not certain, as the plant shows no sign of having been grafted—it may be a seedling. I am forwarding a box of blooms, amongst them some of the above varieties. (Clerk, *Gardener to J. B. Fortescue, Esq., Boscconoc*. [The flowers are beautiful. Ed.])

VOLES AND MICE.—Mr. J. Simpson of Wortley, writing in your issue of April 3 last, classifies these rodents as distinct, by their modes of doing mischief. Mr. Simpson's article was in reply to ours in a preceding issue, in which we stated the damage they did to a large break of Scots Fir in our nurseries here. We were in hopes that some eminent authority would have had something to say in last week's issue on the subject of voles or mice; or, more correctly, field-mice. It is of small importance whether it is vole or field-mouse, since it is a fact well-known to observers that both of those nibbling vermin do damage to young trees; and in all severe attacks, both the long-tailed and the short-tailed field-mice have been present, the short-tailed variety, or so-called species, predominating. Close observers have seen both sitting on the young trees nibbling at the buds, and have killed them in the act, the short-tailed

being always more numerous than the long-tailed, or common field-mouse. The device of digging pits to trap voles and field-mice is an ancient, and generally successful one. The success of the method was amply proved in this country so far back as the year 1814, when over 30,000 of them were so trapped in the Dean Forest, and about the same time large numbers were caught by the same method of pitfalls in the New Forest. In these instances it is recorded that in both forests the two sorts of mice were observed, but the short-tailed were by far the more numerous, which coincides exactly with our own annoying experience this spring. In any case, both sorts get into young trees and nibble the buds, and both are trapped by the same means—pits, or mouse-traps of various kinds. Stiff-growing, well-feathered Scots Fir, some 15 to 18 inches high, would not be a very difficult task for any rodent of the mice tribe to climb, more especially when growing in nursery lines, and we are of the opinion that the short-tailed, being the more numerous, caused more damage amongst the buds than the long-tailed. *Laing & Mather, Kelso-on-Tweed.*

—Oliver Goldsmith, in his *History of the Earth and Animated Nature*, says that soon after the formation of the Forest of Dean and the New Forest, much injury was done to the young trees, Chestnuts and Oaks, by mice, trees of five years old having had many of their roots gnawed through just under the surface of the ground, while hollows 5 and 6 feet high were attacked, and severely barked; the mice, in some instances crawled up the trees, gnawed and ate the bark off the upper branches. In fact, so sudden and rapid was the increase of the depredators that it was feared the whole of the plantation would be destroyed. Various methods were adopted to rid them, in the way of traps, &c.; but that which proved the most successful was to dig holes (much wider at the bottom than the top) 18 inches deep, 2 feet one way, and 1 foot the other. In these holes some 30,000 mice were caught, and it was thought probable that the total number destroyed by hawks, owls, stoats, &c., amounted to 200,000. *H. Markham.*

ASPARAGUS PLUMOSUS.—Mr. Reynolds has planted the back wall of the early vinery at Gunnersbury with this valuable plant, placing the plants in fairly roomy boxes, the shoots cover the wire wall at the back, as soon as forcing begins. The Asparagus makes a free growth, and supplies an abundance of material for cutting, and towards the end of the close time the plants appear to take a spell of rest. The vinery is thrown open after the crop is gathered, and this change of temperature affects the Asparagus similarly to the putting on of heat, for a very free growth is again put on, as if the plant was desirous of doing its utmost service to the cultivator. R. D.

TRANSPLANTING BRACKEN.—The transplanting of the Common Bracken Fern seems a simple operation, but if I am not mistaken, I can explain the cause of failure in establishing the Fern in a new spot. To be successful one must take up sods not less than 6 inches in depth, and a foot or so square, choosing the sods where the Bracken is thickest. The sods should be relied on a hard bottom, and soil rammed hard round each sod, as the black rhizomes of the Fern seem to prefer a hard medium to root in. If the transplanting is done in this way, rather than by lifting small bits of the rhizomes, success will follow. Now is a good time for transplanting, or any time before the fronds are a few inches high. Being so common in some parts, and so rare in others, I think it worth knowing how to transplant such a beautiful wild plant from one district to another. *W. Gidding.*

striking forms now in cultivation were the result of the patient accumulation of gradual variations. Drawings of the remarkable forms "Pavilio," obtained by de Langhe-Vervaeck, and of "The Bush-Hill Pioneer," by Messrs. Hugh Low & Co., were shown. It was pointed out that the tendency of the species under cultivation was to lose its distinct generic character, and to approach in more generalized type. The reflexion of the corolla-segments was often lost as in *Lysimachia*, the segments were sometimes multiplied as in *Trientalis*, and the margins were fringed as in *Soldanella* and cultivated forms of *Primula sinensis*. "The Bush-Hill Pioneer" possessed, in the creasing of the petals, a remarkable character which paralleled in many primulae a plant occurring in a wild state. [We believe a similar condition occurs in the nearly allied order *Myrsinaceae* Ed.] A series of plants was exhibited to illustrate the origin of the garden "Cineraria." It was generally agreed that this had sprung from one or more species native of the Canaries. An extreme cultivated form was shown and compared with *Senecio crenatus*, which all internal evidence indicated as the sole original stock. S. Heritieri, another reputed parent, was exhibited. But it was pointed out that this was a shrubby habit, and stems markedly zigzag between the internodes, while the leaves are clothed beneath with a dense white tomentum. These characters it transmits more or less to its hybrid offspring. In illustration of this point Mr. Poe's hybrid (S. super-Heritieri x crenatus) was exhibited (as similar one has occurred at Edinburgh); also the hybrid of S. Heritieri x *Cyclamen*, which, as the latter crosses very freely with the garden *Cineraria*, and as the latter never exhibits any trace of the characters of S. Heritieri, it was concluded that that species had no part in its origin, and that, as in the case of the *Cyclamen*, the striking development of S. crenatus in cultivation was due to the continued accumulation of gradual variations.

Mr. A. W. BENNETT exhibited a series of drawings by Mr. E. B. Green of root hairs of plants with various parasitic growths, and showed preparations of several under the microscope.

ROYAL HORTICULTURAL.

APRIL 13.—A magnificent display was made at the usual meeting of the Committee held on Tuesday last in the Drill Hall, James Street, Westminster. The capacity of the hall is always tested at the meeting in April, when, in addition to the usual class of exhibits, there is the annual show of the National Auricula and Primula Society. We have seldom or never, however, seen the hall so crowded with plants and flowers as on this occasion; and Mr. Wright, the Superintendent, from Chiswick, had considerably more than 100 exhibitors even a portion of the space they required. Several of the centre tables were occupied with the Auriculas and Primulas. Some of these might have been accommodated in one of the galleries.

Under the wall on the left side of the hall were staged a number of groups of miscellaneous plants which together made a considerable bank. The collections of Roses were numerous, including plants in pots, and cut flowers. An increased number of Orchids was staged, and magnificent displays of *Narcissus* bloom came from the trade. A collection of hybrid *Narcissus* from the Rev. G. H. ENGLEBERT, included several choice novelties. There was again a number of excellent *Hippastrums* staged, and the largest collection by far was from an amateur. In the afternoon a Lecture was delivered by Mr. J. WILLIS upon Artificial Manures.

Floral Committee.

Present: W. Marshall, Esq., in the chair, and Messrs. H. B. May, H. Herbst, J. Fraser, J. H. Pitt, R. Owen, J. Jennings, J. F. McLeod, R. B. Lowe, C. J. Salter, C. Jeffries, J. D. Pawle, C. E. Shea, E. Mawley, G. Gordon, C. E. Pearson, J. W. Barr, H. Cutbush, E. Beckett, J. Laing, H. J. Jones, J. Walker, W. Bain, R. M. Hogg, J. Fraser, J. Hudson, T. W. Snares, G. Paul, C. Elck, H. Turner, and R. Dean.

Messrs. CUTBUSH & SONS, Highgate Nurseries, London, N., made a capital exhibition of miscellaneous plants, including similar species to those shown from the same establishment on the last occasion (Bronze Flora Medal).

A very bright group of plants from Messrs. JOHN LAING & SONS, Forest Hill Nurseries, London, N., included some well-flowered plants of *Azalea mollis*, *Erythras*, Turner's Crimson Rambler Rose, *Calla Pentlandii*, *Hydrangeas*, *Cyclamen*, several good *Clethras*, &c. (Silver Flora Medal).

MR. H. B. MAY, Dyson's Lane Nursery, Upper Edmonton, N., had a group of plants, including many choice Ferns, Palms, *Dracaenas* and *Aralias*, *A. parvifolia* Sprengeri, several foliage *Begonias*, &c. (Silver Enkiantha Medal).

A magnificent group of spring-flowering plants was arranged upon the floor near the door by Mr. J. F. McLeod, gr. to J. P. MORGAN, Esq., Spencer Cottage, Hockampton, Azaleas, *Boronias*, *Lilacs*, *Hippastrums*, *Ericas*, *Lilium Harrisii*, and other forced plants were intermixed with *Crotons* and *Dracaenas* of good colour. *Galadivias*, *Poinsettias*, and other choice foliage plants. One dozen plants of *Azalea Deutsche Perle*, from the same exhibitor, were exceedingly well-flowered (Silver-gilt Flora Medal).

A group of plants of double-flowered *Cinerarias*, representing a number of shades in colour, from purple and rose to almost pure white, was contributed by Messrs. KNOWLY &

SOCIETIES.

LINNEAN SOCIETY OF LONDON.

APRIL 1.—Dr. A. GUTHRIE, F.R.S., President, in the chair.

MR. W. T. THURSTON-DYER exhibited:—1. A series of drawings (on the screen) to illustrate the "Cultural evolution of *Cyclamen latifolium*, Sibth." The species is a native of Greece and the Levant, and is believed to have been first introduced into European cultivation in 1731. In 1768 Miller described a form modified by cultivation under the name of *Cyclamen persicum*. This name was erroneous, as, according to Boissier, neither the wild nor the garden form occurs in Persia. The latter persisted in cultivation for about 150 years, and about 1860 became the starting point of the modern races which were illustrated. *Cyclamen latifolium* has never been hybridized, and it was shown that the

Sons, Langport Nurseries, Somerset. It was a distinct exhibit of considerable attraction (Vote of Thanks).

Messrs. PATER & SONS, The Old Nurseries, Cheshunt, made a display with roses in pots. Such varieties as the following were well-forward and capital plants: Captain Hayward, Coline Forester, Gustave Pignoneau, Mrs. S. G. Crawford, Madame Hoste, Madame de St. Joseph, Elise Fugier, Beauté Indochinoise, George Perrier (a pretty button-hose Rose), and others. In front of and between the plants, were several interesting species of hardy plants. We should have mentioned the new H.P. Rose, Lawrence Allen, a fine, flesh-coloured, with wide florets, and apparently of strong growth (Vote of Thanks).

Mr. GEO. MOORE, the Rose Nurseries, Canterbury, had a few Roses-trains in pots, and a magnificent display of cut blooms, some of which were shown in sprays of upwards of one foot in length, and having an abundance of healthy, vigorous foliage. That excellent variety, Mrs. Jno. Laing, was shown largely, and many other well-known varieties (Silver Flora Medal).

Roses were also shown by Mr. JNO. WALKER, Thame Nurseries, Oxon, who had a rare lot of blooms of Maréchal Niel, and Niphetos (Silver Banksian Medal).

Mr. W. RUMSEY, Joyning's Nurseries, Waltham Cross, made a pretty display immediately facing the entrance of the show. The new variety, Mrs. Ramsay, was well shown; as cut blooms, and in a plant. Niphetos and others were good (Silver Banksian Medal).

An exhibit of the beautiful Rose, Fortune's Yellow, in a number of sprays, from Mr. Fyfe, gr. to Lord WANSAGE, Lockinge Park, Wantage, was most attractive (Silver Banksian Medal).

A Bronze Banksian Medal was deservedly awarded to E. MAWLEY, Esq., Berkhamsstead, for an exhibit of roses.

Mr. S. MORTIMER, Rowledge Nurseries, Farham, exhibited two seedling varieties of ornamental Cactus. One of these, named Majestic, was a fine specimen of crimson-coloured leaves, with variegata veining. The other, Eastern Queen, was very robust, of somewhat coarse habit, and with promiscuously variegated foliage. A number of plants of each variety were shown.

A large group of Hippeastrums was sent by Captain Holt-Frost, Charlton, Tisbury, Gloucestershire (gr. A. Chapman). Many of the seedling varieties were of very commendable quality, while others were of less merit. All had been well cultivated. The colours in a great proportion of them were uncommonly bright and distinct. Duke of York, and were uncommonly bright and distinct. Duke of York, an intense crimson self, with fine flowers of unusual substance, was recommended an Award of Merit; as also the varieties The Czar and Chimborazo, both dark self-coloured flowers of much merit (Silver Flora Medal).

In a group of excellent Hippeastrums shown by Messrs. JAS. VETICH & SONS, Royal Exotic Nursery, Chelsea, the following varieties were recommended Awards of Merit:—A variegated with white; Brenda, a large scarlet crimson flower, with green base; Iguacita, a plant with four flowers upon a scape, white veined in the upper segments, principally with red; and Thunberg, a large flower of scarlet with green base, and expanding uncommonly widely.

A variegated Potato was shown by Mr. E. BROCKETT, Aldenham House Gardens, Epsom. A large basket of the plants was shown, each being very freely variegated with white (Award of Merit).

Mr. THOMAS S. WARE, Hale Farm Nurseries, Tottenham, in conjunction with a large exhibit of Daffodil blooms, showed a few hardy plants, including Anemone fulgens, Gentiana acialis, Anemone nemorosa alba, and several Frillarias, &c.

Messrs. R. WALLACE & CO., Kilnfield Gardens, Colchester, showed several very pretty Erythroniums in flower, including E. revolution, which was awarded a First class Certificate. As shown in spikes were about twelve inches high, the flowers about two-and-a-half inches across, rose coloured, but varying considerably—a handsome species of robust growth, foliage broad and marbled. A smaller plant was shown as E. revolution, var. Bolanderi, with white flowers, excepting for a yellow band at the base. Frillaria pudica and others were also shown.

Messrs. H. CANNELL & SONS, Swanley, Kent, exhibited a large plant of Fuchsia "Addington," a hybrid between fulgens and F. cordifolia splendens. The flowers are rose-coloured, but about one inch long. The petals are small and much serrated. The plant is exceedingly free-flowering (Award of Merit). See p. 257.

Messrs. CANNELL & SONS also showed sprays of Tropaeolum Phoebe with bright yellow flowers, each stalk marked with orange vermillion, and deeply fringed at the margin (Award of Merit).

Mr. J. LAING & SONS, Forest Hill Nurseries, London, S.E., obtained an award of merit with Ornithogalum lacteum, a well-known species with white flowers of considerable size.

Messrs. BARR & SONS obtained an Award of Merit for Muscari cornutum, a showy, strong-growing species, with bright violet blue flowers, produced about 6 inches high.

A Silver Banksian Medal was awarded the GUILDFORD HARDY PLANT CO. for a fine display of how Auriculas.

Narcissus Committee.

Present: REVS. S. E. Bourne and G. H. Engleheart, Miss Willmott, Messrs. C. R. Scarce-Dickins, Jas. Walker, A. Kingmill, J. de Ornaft, and J. T. Bennett-Poe.

The copious rains of March and April have brought the Narcissi to their culmination in the earlier part of the present month. The Trumpet Daffodils were at their best in the South of England a fortnight ago, but the mid-season and later kinds—the "medio-cornuti" and "peri-cornuti"—later kinds—were at their very best, and characterised by the purity of colour and freshness given by a mild and moist spring.

The lover of Daffodils always looks to Messrs. BARR & SONS for an ample trade exhibit, and certainly there was no disappointment at the stand, inasmuch as in either quantity or quality. Almost every variety in commerce was represented, and the flowers were exceptionally good in colour, especially those of the Burbidge section (Silver-gilt Flora Medal).

The latter collection was run hard in point of merit by the very large bank of all varieties staged by Mr. T. S. WARE, Hale Farm Nurseries, Tottenham, who also gained a Silver-gilt Flora Medal. We would, however, suggest that the flowers were crowded together so tightly in bunches as to lose much of their effectiveness, a criticism which may also be made of the Trumpet Daffodile for size, but which would have been seen to much greater advantage if only half the number of blossoms had been put into each bunch (Silver-gilt Banksian Medal).

In the amateur competition for Messrs. Barr's Silver Cup, the only entry was that of J. E. DENNERT, Fox, Esq., whose excellent flowers well deserved the award. The red-crowned posternum was unusually bright.

The Rev. O. H. ENGLEHART had the largest exhibit of his own seedlings that he has yet shown. Appended to it were interesting notes upon the parentage of the several groups, which rendered his stand an object-lesson in hybridisation. The centre was occupied by numerous examples of advanced quality, conspicuous being the Prince of Wales, a solid, broad-petalled flower of the Nelson class, with a large cup of fiery orange-scarlet (award for the premier seedling); Beacon, a more stray flower, with crown wholly of intense red (First-class Certificate). Many hybrids of N. triandrus were included, of which Snowdrop albicans × triandrus obtained a First-class award, and several other species of seedling posterns were also shown, noteworthy for increased size and deep-coloured eyes. An Award of Merit was given to N. incomparabilis Beauty, from Messrs. BARR & SONS.

Orchid Committee.

Present: Harry J. Veitch, Esq., in the chair; and Messrs. JAS. O'BRIEN (Hon. Sec.), Dr. B. Crawshaw, H. M. Pollett, C. J. Lucas, H. L. Ballantine, W. H. Young, W. H. M. White, W. H. Protheroe, A. H. Snee, E. Hill, F. J. Thorpe, W. Cobb, F. Mason, T. H. Hayward, S. Courland, J. Douglas, and H. J. Chapman.

The large number of groups of Orchids greatly taxed the resources of the Hall, and extra tables had to be arranged to meet the demand for space.

Messrs. JAS. VETICH & SONS, Ltd., Royal Exotic Nursery, Kings Road, Chelsea, were awarded a Silver Flora Medal for a very fine group of rare, and excellently-grown Orchids, a very interesting feature in which was a fine cut-grown specimen of Pleurochilus, a variety of the genus, which was one of the sprays having five fine blooms; with it were the pretty little white-and-violet E. Endressii, from which Messrs. Vetch have evolved the beautiful and floriferous E. × Endressii-Wallisi and E. × depauperata, both of which were represented by several varieties. Also shown for the first time was Lepto Cattleya × Diglyana-Triandri, which secured a First class Certificate.

In colour and in the fringing of the lip it is similar to the fine L.-C. × Diglyana-Mossie, illustrated in the Gardeners' Chronicle, May 25, 1896, p. 657. Messrs. Vetch also received a First-class Certificate for Zygopetalum × Perrottetii super-Maxillaria Cantieri × intermedium (S.), a very new and beautiful Zygopetalum, with bright violet lip and purplish-brown sepals and petals, with a few slight greenish bars. Also very noteworthy in the group were Cattleya Schroderae-anabilis, a charming peach blossom coloured flower, with orange glow in the tube. Two other examples of the richly-tinged Zygopetalum × Latona × Cattleya × Ascania (L. xanthina × C. Triandri), with light yellow dove s, and rose-purple lip; Chysis × Chelsoni, Dendrobium × Wardiano japonicum, D. × chrysoideum, D. × Cybele nobiliss, D. × Alceps, D. × Aspsia, a fine pan of Masdevallia transiensis var. rich chestnut-brown; petals yellow, heavily blotched with brown. Baron Schroder also sent a fine inference of his handsome hybrid Odontoglossum × Delense.

Baron Sir H. SCHRODER, The Dell, Egham (gr. Mr. A. Blandini), showed Odontoglossum × Wilkeanum "Queen-Empress," about which there was no two opinions as to its being the finest example of its class, and well deserving the First-class Certificate awarded. The flowers were large and broad, bright yellow, except the margin and the base, which, viz., "Cyathulum Devoniunum," with several fine spikes; a large specimen of Miltonia cruenta, and a finely-flowered Maxillaria grandiflora, were awarded Cultural Commendation; and a number of spikes cut from a large specimen of Coelogyne clava secured for that plant a Botanical

Certificate. In the group also were a pretty plant of Leptotes bicolor, Cypripedium glanduliferum, the elegant Dendrobium × The Pearl, Devoniunum album, D. signatum, D. Brucerianum, Phaius × Martley, Epidendrum Endressii, Masdevallia leontoglossa, M. × Oclengiana, M. × Shurtzayana, Chamberlain's variety, and Maxillaria Houatteana (Botanical Certificate), &c. The group secured a Silver Banksian Medal.

Major JOSEPH, Sunningdale Park, Sunningdale (gr. Mr. F. Thorne), staged a group composed principally of grand plants of the large white Diacrium (Epidendrum) bicoloratum, which most growers deem almost impossible to grow. Nothing could be finer, more vigorous, and floriferous than these, and the Silver Flora Medal awarded was more for the culture of the plants than for the group. Also with the Diacrium were a grand specimen of Dendrobium thyrsiflorum, Epidendrum atropurpureum album, Odontoglossum Hallii, &c.

J. BRADBRAW, Esq., The Grange, Southgate (gr. Mr. Whiffen), staged a fine group, in the back of which were numerous Cypripedium Lovianum, and in the front a fine lot of dear Dendrobium Jamesianum. In the body of the group were good Odontoglossum Pescatorei, O. crispum, O. Hallii, O. Andersonianum, Lycaste, &c. (Silver Banksian Medal).

Messrs. F. SANDER & CO., St. Albans, were awarded a Silver Banksian Medal for a very interesting group, a fine lot in which was a noble plant of Zygopetalum Burtii, with ten grand, wax-like, brown, yellow, and white flowers. Other good things were Dendrobium Harryanum, Cypripedium × Minnie Ames (concolor × Curtisii), Cymbidium javanicum, Stenochilus fibriarata, Phaius × Oweniana, Phalaenopsis Bonagalli, F. rosea leucata, a fine lot of Lycaste Skinneri, and Miltonia veitchiana.

Messrs. HUGH LOU & CO., Clapton, staged a good group, composed of Dendrobium thyriflorum, D. × gratioanum, Miltonia Roehli, Oncidium Kraneri, Odontoglossum Hallii, O. triumphans, O. cirrosum, O. luteo-purpureum, O. Andersonianum, &c. (Silver Banksian Medal).

D. B. CRAWSHAW, Esq., Rosefield, Sevenoaks (gr. Mr. Fyfe) showed a group of excellently-grown Odontoglossums, comprising several distinct varieties of Odontoglossum, a derosum and others of that class; a noble form of O. triumphans; a very large and richly-coloured O. luteo-purpureum, which has been grown by Mr. Crawshaw from a small plant, and has been in his collection sixteen years (Silver Banksian Medal).

MARQUIS CAMDEN, Bayham Abbey, Lamberhurst (gr. Mr. A. Methuen) was awarded a Silver Banksian Medal for a group of Dendrobium Wardianum, D. Devoniunum, D. nobile, Cypripedium, &c.

J. T. BENNETT POE, Esq., Homewood, Cheshunt, received a Cultural Commendation for a stand of splendidly-grown Cattleya citrina.

A stand of good Cattleya citrina set up with cut blooms of Cattleya Schroderae and Maidenhead Fern was also set up by W. C. WALKER, Esq., Percy Lodge, Winchester Hill (gr. Mr. Geo. Cragg) (Vote of Thanks).

E. J. JOHNSON, Esq., Rougham Hall, Bury St. Edmunds (gr. Mr. H. Henley), received a Cultural Commendation for a finely-flowered Cattleya Schroderae album.

C. J. LUCAS, Esq., Warnham Court, Horsham (gr. Mr. Duncun), exhibited a number of cut spikes of splendid varieties of Odontoglossum Andersonianum, &c.

Captain HOLBORN, Westonbirt, Tisbury (gr. Mr. Chapman), showed Ixora Skinneri Westonbirt variety, a large flower; the chief peculiarity was the white lip with rose-coloured margin.

FRED HADBY, Esq., Tyntesfield, Ashton-on-Mersey (gr. Mr. Stafford), showed another of his good forms of Dendrobium × Chlo.

STONEY JACKSON, Esq., Danhurst, Epsom (gr. Mr. E. Short), was given an Award of Merit for Odontoglossum × Andersonianum, Danhurst var., a very large and fine variety.

F. W. MARTLEY, Esq., Lake House, Byfleet (gr. Mr. Bradley), was awarded a Silver Banksian Medal for an immense specimen of Ansellia africana, which had been grown since 1892, and now bore nine spikes with, in the aggregate, 500 flowers. The fine old plant was also given a Botanical Certificate.

C. L. S. INGRAM, Esq., Elstead House, Godalming (gr. Mr. T. W. Bond), staged the pretty Lilio Cattleya, gr. Sir Wm. Ingram, which received an Award of Merit last year; and Cattleya × Wm. Murray.

J. WILSON POTTER, Esq., Sligeham, Crofton, received an Award of Merit for Odontoglossum Pescatorei, Sligeham var., one of the largest and best types, with perfectly formed, slightly rose tinted flowers.

Messrs. B. S. WALLACE & SONS, Victoria and Paradise Nurseries, Upper Holloway, staged an effective group, composed of a large variety of Odontoglossums, chiefly hybrids, Ada aurantiaca, various Dendrobis, Cattleya Mendeli, C. citrina, Eulophia Elisabetha, several good Cymbidium Devoniunum, Calanthe Sanderiana (a fine lot), C. cucullata gigantea, Lycaste Schilleriana, Oncidium Phalaenopsis, O. phymatocidium, &c.

Frau IVA BRANITZ, Riehsbach, Zurich, sent Epidendrum falcatum and Odontoglossum Cervantesii decorum.

C. J. CROSSFIELD, Esq., Sefton Park, Liverpool (gr. Mr. Barkley), showed good examples of Dendrobium Wardianum and Odontoglossum crispum "Gleddih," a large and finely-formed flower.

Fruit Committee.

Present: F. Crowley, Esq., in the Chair, and Messrs. T. F. Rivers, G. T. Miles, J. Cheal, W. J. Simpson, W. Pope, J. Wright, A. Dean, J. A. Lobb, J. Willard, W. Farr, W. Bates, C. Herrin, J. Smith, G. Reynolds, W. H. Davers, R. File, F. Q. Lane.

A collection of vegetables, including very good produce for the season, came from EARL FERBY, Syon House, Brentford (gr., Mr. G. Wythes). We may specially excellent Asparagus cut from forced beds in the open, Allan's favourite Cucumber, a nice-looking medium sized fruit, ribbed and slightly spined; New Potatoes Sharp's Victor, Mushrooms, Velvets' Main Crop Cabbages, Royal Oak Kale and Lockett's Syon House Proficure Tomatoes, Potato Ashleaf, Early Scarlet Horn Carrots, Cucumber Seedling, Sutton's Early Favourite Cabbage, a very early hearting variety; small Chloicy, and other saladings, as well as all the various hardy vegetables in season. In all, fifty dishes of vegetables and nine pennets of La Croix de France Strawberries (Silver-Gilt Knight) Medal.

Another and much smaller collection of vegetables and fruits came from Mrs. WINGFIELD, Amphill House, Amphill (gr., Mr. Empson). Very good field heads of Carter's Mammoth Spining Cauliflower, Carter's Early Cabbage, St. Oystin and Early King Potatoes. The Seakale shown was well washed, but drawn, from too much heat having been employed. The fruiting plants of Royal Sovereign Strawberry, with from eight to twelve ripe fruits were very well done, showing well the capabilities of the variety. A large dish of the same was shown. A few dishes of Apples were in the field, the bestest looking being Gloria Mundi, Wellington, and Tyler's Kernel. The table was backed by a row (right) of plants in pot of Early Morn Pear (Award of a Silver Knight) Medal.

Mr. Divers, gr. to the DUKE OF RUTLAND, Belvoir Castle, exhibited, for the season, a rather large number (36) of dishes of distinct Apples, many of them being fresh and plump-looking. Such were Redstart, Sir Caxby, Anne Elizabeth, King of Pippins, Cluster Golden Pippin, Baron Ward, Normanton Wonder, Caldwell, Rosemary Russett, Jenkinson's Seedling, Hollow Crown Pippin (Silver Bankman) Medal. A PEARS, Esq., Spring Grove, Isleworth (gr., Mr. W. Farr), showed new Hybrid Golden Grapes and samples of Lady Downes Seedling of 1896, the latter having that desirable bloom on the berries one is accustomed to see at the end of the autumn. He also showed a basket of Royal Sovereign Strawberries of size fair and excellent colour, some solid Mushrooms, Beans, &c.

In the Apple competition the 1st prize fell to Mr. C. ROSS, gr., Welford Park, Newbury, for his plate of Lord Burghley; and the 2nd to Mr. C. HERRIN, gr., Drogheda, Maidenhead, for a plate of Sturmer Pippin. No Pear shown met with the approval of the Committee, Mr. R. C. HARRIS, of Jersey, showed seven very fine specimens of Belle de Jersey, or rightly *Uvalde*, St. Germans.

NATIONAL AURICULA AND PRIMULA.

APRIL 13.—The exhibition of the National Auricula Society in the Drill Hall was at least a fortnight too early to have the flowers at their best. Many of the varieties staged showed signs of pressure on the part of the grower to get them into bloom 'at all'. When the flowering period is hastened by the application of heat and other means, the flower is apt to resent the interference by coming coarse, and coarseness was the prevailing feature of the show Auriculas. They are much longer in expanding their pipes than the alpine types, and they are seen in the best condition when they can come on slowly into flower in their own way and time. But when the date of the show is too early, even in an early season, much less than in the retarding one we are now passing through, some assistance is necessary if the plants are to be had in flower by a given date. Even the alpine varieties appeared to be less refined than usual, as if they had not been pushed on into bloom; and some plants had only just got into bloom, and as if with something like regret that notice could be taken of plants receiving prizes having two expanded pipes only. This is a departure from the old unwritten law of the old florists' procedure that class flowers should have five pipes, and those as single plants should have three pipes.

Show Auriculas.—There were four collections of twelve varieties, and Mr. CHARLES PHILLIPS, Bracknell, Berks, a grower who has recently passed from the amateur to the dealer stage, was placed 1st, and in this class one may always expect to find the best plants in the show; he had of green edges, Mr. Henwood's Blue, a fine new variety he is distributing, very large, and, at its best, the finest green edge in cultivation; Rev. F. D. Horner, with nine fine expanded pipes, this variety being eventually selected as the premier plant in the show; and Abbé Liszt. Of grey edges, George Rudd, C. orange Lightbody, and Bellefleur. Of white edges, Acme, and Consecutive. Sir Mr. Phillips' rich maroon, a flower of the first quality; Mr. Burnett, redder in colour, but flat and smooth; and Heroine, somewhat out of character. Mr. A. J. Sanders, gr. to Viscountess CHEWTON, Cobham, Surrey, was 2nd, having, of green edges, Rev. F. D. Horner, Prince of Greens, and Abbé Liszt; grey edges, Richard Headley, Rachel, and Mr. Potts' white edges, Mr. Dodwell, John Simonsite, and Acme; selfs, Heroine, and Mrs. Potts. P. J. WORSLEY, Esq., C. Ifon, Bristol, was 2nd; and J. T. BENNETT-P-E, Esq., Ashley Place, Strid.

There were four exhibitors of six varieties, Mr. C. PHILLIPS being again 1st, with green edges, Mrs. Henwood, and the Rev. F. D. Horner; grey edge, George Rudd; selfs, including white, in the Rev. F. D. Horner, Mrs. Phillips, and Mrs. Burnett. Mr. A. J. SANDERS was again 2nd, having of green edges, the Rev. F. D. Horner and Abbé Liszt; grey edge, George Lightbody; white edges, Acme and Mrs. Dodwell; and Viscountess Chewton, a bright violet self, in the way of Mr. Potts. J. T. BENNETT-P-E was 3rd, and P. J. WORSLEY, 4th.

With four varieties, those competing in the two foregoing classes being debared from the next two, W. SMITH, Esq., Bishop's Stortford, was 1st, with the Rev. F. D. Horner, Rachel, Acme, and Heroine, one of each class; Mr. A. R. BROWN, Birmingham, was 2nd, having the Rev. F. D. Horner, Heather Bell, white edge; and C. J. FERRY and HERCULES, Harrow, was Mr. A. Gilbert, gr. to the Duke of R. Flood, Harrow, was 3rd, his two best flowers, green edge General Niell, and Acme, white edge. Mr. A. R. BROWN had the best pair, staging grey George Lightbody, and white Heather Bell. W. SMITH, Esq., was 2nd, with Abbé Liszt and Rachel; Mr. GILBERT being 3rd.

The best specimen green edges was Rev. F. D. Horner, which was awarded the 1st prize, the awards being made in the order of the names of the exhibitors, Messrs. A. J. SANDERS, C. PHILLIPS, and the GUILDFORD HORTICULTURAL NURSERY Co., Abbé Liszt and James Hamford came next in the order of merit. That fine variety George Lightbody came 1st in the 1st three prizes in the class for grey edges, Messrs. J. DOUGLAS, C. PHILLIPS, and A. J. SANDERS, being the exhibitors. Marnion, George Rudd, and Grey Friar were also shown. That fine white edge, Acme, took the three best prizes in the class for a white edge, Messrs. DOUGLAS, PHILLIPS, and J. T. BENNETT-P-E, being the exhibitors. George Rudd and Rachel were placed 1st, 2nd, and 3rd, respectively, in the class for selfs. Mr. Potts took the three 1st prizes in the Self class, Messrs. DOUGLAS, FISK, and the GUILDFORD NURSERY Co. being the exhibitors. Mrs. Phillips, not so finely shown here as in Class A, was 4th, following Rev. F. D. Horner.

The GUILDFORD NURSERY Co. were at it with fifty Auriculas. And they were not content with that, but they were able to put their best into this class, and win easily. They had of green edges, the Rev. F. D. Horner, Abbé Liszt, and John Garrett Adams; grey edges, George Lightbody, Colonel Champey, Dr. Horner, Ringleader, and George Rudd; white edges, Acme, Mrs. Phillips, Smiling Beauty, and Heather Bell; selfs, Heroine, Lord of Lore, Lutetrop, Mrs. Potts, Black Bess, and Beryl, a reddish-cast self. 2nd, Mr. J. DOUGLAS, whose leading varieties were: green edges, Rev. F. D. Horner, Abbé Liszt, Monarch, and seedlings; grey edges, George Lightbody, Ajax, and George Rudd; white edges, Marple, Acme, Heather Bell, and Lord of Lore; Mrs. Potts, Sir Lancelot, and Heroine. Mr. A. J. SANDERS was 3rd.

The Alpine Varieties, as usual, were very bright and attractive. There were five collections of twelve varieties. Mr. C. TURNER, Royal Nursery, Slough, was placed 1st, having of gold centres Diamond Jubilee, Sunrise, John Bewick, Unique, and Charles Prince; of white centres, COURTESY, DORIS, Bella Wheelwright, Nellie, Mungo, McGeorge, and seedlings. This collection comprised some striking varieties. 2nd, Mr. CHARLES PHILLIPS, with varieties of his own raising, such as Vandyke, Little Gem, Hebe, and seedlings; the new sorts of this raiser being characterised by fine quality. Mr. J. DOUGLAS was 3rd, having of green edges, the Rev. F. D. Horner's white varieties. Mr. C. TURNER was again 1st, with E. Shaw, Sunrise, and Charles Turner, golden centres; Countess and Nellie, white centres. Mr. C. PHILLIPS was 2nd, with Mr. Gorton, Chastity, Vandyke, and Mrs. A. C. Bartholomew, golden centres; white centres, Gladys and a seedling. With four varieties, Mr. W. L. WALKER, Reading, was 1st, with Armonde, J. F. Kew, Glna, and Defiance. Mr. J. J. KEEN, Southampton, was 2nd, with seedlings.

Golden centres, as specimen plants, brought some good varieties. Mr. W. L. WALKER was 1st, with a very bright seedling; Mr. A. FISK was 2nd, with Hotsprings; and Mr. J. GILBERT 3rd, with Mungo. Mr. WALKER was 1st, with a white purple self, Mr. WALKER was 1st with Thetis, a maroon and purple self flower, and 2nd with Defiance. Mr. GILBERT coming 3rd with A. J. Sanders.

Fancy Auriculas were shown in twelves by the GUILDFORD NURSERY Co. and Mr. JAMES DOUGLAS. Rolt's Green Edge, with its red ground and green edge, an unusual combination, was prominent; also some very promising yellow selfs. Mr. DOUGLAS came 2nd, mainly with fantastic forms, which put in an appearance among seedling show varieties.

Polyanthus of the Fancy or Giant Type were shown by Messrs. A. J. SANDERS, J. DOUGLAS, and G. DIXON, Chesham. They were scarcely up to the usual standard of quality. It was so with the single Primroses, Mr. DOUGLAS was 1st, and Mr. SANDERS 2nd.

Very fine Primroses were shown. Mr. DOUGLAS taking the 1st prize with decidedly the best, having the white, bluish, crimson, lilac, late yellow, and purple. The GUILDFORD NURSERY Co. were 2nd. Mr. DOUGLAS had the best baskets of Primroses and Polyanthus, the GUILDFORD NURSERY Co. again 2nd.

The classes for twelve and six species or well-marked varieties of Primulas, are, as they highly interesting, and it is a pity they do not receive more entries. Mr. DOUGLAS was the only exhibitor of twelve, having in very good character verticillata, Forbesii, obconica, japonica, intermedia, floribunda, decora, mollis, and two varieties each of Sieboldi and Auricula. Messrs. PAUL & SON, Chesham, were the only

exhibitors of a collection of six, having roses, verticillata Forbesii, denticulata, mollis, and a single flowered Primrose. The best group of six species or varieties of Primula or Auricula arranged in a box or basket, came also from Mr. DOUGLAS, distributed in a box with a surface of rocks and moss, at the back being such tall-growing subjects as Sieboldi, Forbesii, verticillata, and japonica, with intermedia decora, obconica nivalis and Auriculus, and Primroses in the foreground. The GUILDFORD NURSERY Co. was 2nd, having a round basket, at the back of which was a fine form of P. obconica, and in the foreground Auriculus of various types.

The Premier Auricula was green edge, the Rev. F. D. Horner, with nine well developed pipes, one of the 1st prize twice exhibited by Mr. C. PHILLIPS.

NEW VARIETIES.

Several new varieties, show and alpine, were staged in their classes. In that for show varieties, Mr. J. DOUGLAS was 1st with Greenfinch raised by himself, and not to be confounded with Horner's Greenfinch of a few years ago; tube and paste good, black body colour and bright, deep-green edge. This was also awarded the Special Prize of half-galvanisation offered by Mr. W. Smith for a seedling green edge; and it received a Certificate of Merit also. A 2nd prize was awarded to an unnamed seedling of similar good qualities, exhibited by Mr. WILLIAM BADCOCK, Oxford Road, Reading, and this also received a Certificate of Merit. A bright maroon self, named Model was shown by Mr. DOUGLAS, but it had the defects of a granulated paste and a defective outline. Certificates of Merit were awarded to the following new Alpines:—Ormonde (W. L. WALKER), golden centre, with a rich maroon and fiery crimson shading, very fine; Olivia (W. L. WALKER), pale cream centre, maroon, crimson, and delicate bluish shading; and Mrs. Markham (DOUGLAS), gold centre, with a grey margin shading to red. 1st prize was awarded to Mr. J. DOUGLAS for a gold-centred Alpine, Duke of York, maroon, shading to fiery crimson, very fine and bright; and a Certificate of Merit was also awarded. 2nd, Mr. C. TURNER, with gold centre Charles Turner, maroon, with broad shading of fiery salmon, smooth and fine. Mr. DOUGLAS was also shown a seedling green-centred Alpine Duke of Eros, maroon, reddish salmon, and a pale mauve; and Mr. C. TURNER, the 2nd with Dora, maroon, with broad shading of mauve-pink.

BRIGHTON & SUSSEX HORTICULTURAL.

APRIL 6, 7.—The show held on the above dates was decidedly one of the best hitherto seen in Brighton in the spring, speaking of it as a whole.

Mr. G. MILES, Dyke Road, Brighton, was well to the fore in the large group class, which has generally been good at Brighton shows; Mr. E. Meacham, of Brighton, and Mr. WOODS, Preston, was 2nd, but beating Mr. G. MILES in a special class for "manipulations decorated with plants and flowers." This competition proved an attractive one, that seems to be well deserving of imitation at shows elsewhere. Mirrors, shelves and fire-screens are provided by the Society, and I have seldom observed such "show" exhibits in so small a compass.

Mr. H. Garnett, gr. to R. G. FLETCHER Esq., Mount Harry, Preston, staged some good Orchids, the best being Dendrobium Dilohenseanum, D. thyrsiformum, and 'Cypridium philippense.

There was a large number of classes for spring flowering plants, and the following are a few of the best contested. Mr. W. E. ANDERSON, gr. to S. COWELL, Esq., Melbora, Preston Park, was 1st for twelve pots of Tulips; Mr. H. ANSCOMBE, Kemp Town Nursery, for twelve Hyacinths; Mr. A. F. GOLDING, gr. to H. S. VICKERS Esq., Dyke Road, for Lily of the Valley; Mr. J. Hill, gr. to M. WALLIS, Esq., Springfield, Preston, for Lachenalia; Messrs. W. MILES & Co., Church Road, Hove, for Marguerites, Narcissus, Azaleas Mollis, and Lilium longiflorum var. Harriari; and Mr. H. Naylor, gr. to Mrs. MACDONALD, Preston, for some well-grown Greenhouses Azaleas. *Auricular groups* were staged by Mr. J. Hill, gr. to M. WALLIS Esq., Preston, beating Mr. F. Bapley, gr. to Miss VISICK, in the principal class. Some very fine cut blooms of Narcissus came from Mr. M. Tourle, gr. to F. BARBERD, Esq., Little Horsted, who staged grand bunches of Emperor, Sir Watkin, Beauty, Empress, Queen Sophia, W. Backhouse, Duchess of Westmeath, and Mrs. Michael Foster, Madame de Graff, conspicua and grandis.

Some excellent non-competitive stands were put up; Messrs. BARN & SON, showing Narcissus in large numbers; Messrs. J. LAING & SON, Forest Hill, S.E., a very showy group of Palms, Cycloids, and other decorative plants, some good Clivias, and the Richarda Penlandii in better form than I have previously observed the plant. A good collection came from Messrs. BALCHIN & BONS; and cut Roses, Carnations and plants of Crimson Rambler from Mr. G. W. PIPER, The Nurseries, Uckfield.

THE SHROPSHIRE HORTICULTURAL.

APRIL 7.—The annual spring show of the Shropshire Horticultural Society, which took place in the Music Hall, Shrewsbury, on the above date, was a very successful one. The exhibitors were numerous, and many more of its predecessors. This new departure worked most successfully, and the executive are to be congratulated on having brought it about. The display was a first-class one, and, as on previous occasions, the general effect was considerably heightened by the displays of the local florists and others.

Messrs. FRITCHARD & SONS had an extensive stand of flowers and plants, which was quite a feature of the show. Their display of Cyclameos and Azaleas was excellent.

Ms. E. M. BELL, Shrewsbury, had a magnificent collection of flowering plants.

Messrs. JONES & SONS, Shrewsbury, also made a display of floral designs in good taste.

Mr. A. MYERS Shrewsbury, received a special award for a beautiful lot of cut Pelargoniums, and a Silver-gilt medal was presented to Colonel R. T. LLOYD, Aston Hall (gr., Mr. R. C. Crossland), for a charming collection of Orchids and other Roses.

Mr. H. H. FRANCE-HAYBUST was also awarded a special prize for his collection of Amaryllis.

The other exhibitors in the non-competitive class were DICKSONS, Limited, Chester, who had a splendid collection of Narcissus; and Mr. ECKFORD, of Wem, who showed a nice lot of Primulas, &c.

The competitive classes were on the whole of great excellence. The collections, both in the open and amateur classes, were highly meritorious.

The first prize in the miscellaneous collection was awarded to Captain PHILLIPS, of Berwick, Shrewsbury (gr., Mr. Geo. Burrows). This group formed one of the most attractive features of the show.

There was a fine show of Azaleas, Orchids and Cyclameus; Hyacinths, Richardias and Tulips were well represented, and some grand cut Roses were shown.

SHIRLEY & DISTRICT GARDENERS'.

APRIL 7.—A meeting of this Society was held on the above date, the President, Mr. W. F. C. SPANGLER, presiding over a fair attendance of the members.

The Rev. G. H. ENGLEHART, Appleshaw, Andover, gave a Lecture on the "Culture of the Narcissus," and his address was listened to most earnestly. First, he explained the characteristics of the several groups of Daffodils, and afterwards described the best soil for them, how to prepare the same, giving the best time to plant, &c. He spoke of the pleasure derived from growing Narcissus from seeds, with the constant expectation of acquiring something novel or interesting, and urged his audience to grow some plants from seed. He showed by some splendid blooms of Hybrid Narcissus, what may be done by cross fertilisation. A brief discussion ensued.

A hearty vote of thanks to the Rev. G. H. ENGLEHART, both for his lecture and his exhibit was accorded him; and also to Messrs. BARR & SONS, for an exhibit of thirty-five varieties of Narcissus blooms; to Mr. B. LADHAMS, for thirty varieties; and to Mr. W. H. ROGERS, Red Lodge Nursery, for an exhibit of hardy flowering shrubs and American plants.

WISBECH AND DISTRICT HORTICULTURAL ASSOCIATION—NARCISSUS SHOW.

APRIL 7, 8.—This was the second exhibition of this character, and as the entries had tripled in number, no more emphatic proof is required that the Daffodil is being cultivated in the district. The Exhibition, which was held in the Selwyn Hall, was opened by the Mayoress, and it was well attended during the day.

In the open classes, the leading one was for a collection of Narcissus, to fill an area of 16 square feet. There were several entries, and the flowers were arranged in bold and attractive bunches. Mr. G. W. MILLER, Wisbech, was 1st with a very fresh, bright collection consisting of the varieties Emperor, Empress, Capt. Nelson, Samson, Sir Watkin, Glory of Leyden, some forms of the Barri type, and others; in all a good representative collection of about sixty bunches. Mr. A. W. WHITE, Spalding, was 2nd with a collection of some fifty bunches of finely grown leading varieties, and Mr. W. CROSS, 3rd, with six distinct varieties of single trumpet Narcissus.

Mr. G. W. MILLER was again 1st with Glory of Leyden, Emperor, Empress, maximus, Mrs. J. B. M. Camm, and one other, all in fine character. Mr. A. W. WHITE was 2nd with similar varieties, and Mr. F. W. CROSS, 3rd, with twelve distinct varieties. Fine blooms each of the Incomparabilis, Barri, and Leedali sections.

Mr. MILLER was 1st, having Figaro, Queen Bee, Cynosure, Barri-conspicua, Mrs. L. Langtry, &c.; Mr. F. W. CROSS was 2nd with Cynosure—very good, Princess Mary, &c.

With four distinct varieties of Poeticus, Mr. MILLER was 1st, having Oratus and Postarum—very good; Mr. WHITE was 2nd. The best six double varieties also came from Mr. MILLER, Sulphur and Orange Phoenix being particularly good flowers.

Special Prizes were offered by Messrs. BARR & SONS for the best collection of Narcissus, in twenty-five varieties, and here Mr. A. W. WHITE was 1st, exhibiting in fine characters Sir Watkin, Madame Plump, Emperor, Empress, Princess Mary, Horsfield, Dean Herbert, Mrs. Langtry, Oratus, &c.; 2nd, Mr. G. W. MILLER.

Messrs. DE GRAEF BROS., Leyden, Haarlem, offered special prizes for twenty bunches of Trumpet varieties, Mr. A. W. WHITE again taking the 1st prize, exhibiting in fine characters Sir Watkin, Madame Plump, Emperor, Empress, Princess Mary, Horsfield, Dean Herbert, Madame de Graef, Glory of Leyden, and other fine sorts.

In the amateurs' division, the best collection came from Mr. H. WELLS, the Secretary of the Society; Mr. H. E. NEWS

was 2nd. In the other amateur classes there were no entries.

Floral Decorations in Narcissus consisted of shower bouquets, arranged with Narcissus and suitable foliage, Mr. W. M. MILLS, the Curator of the March Cemetery, taking the 1st prize.

Mr. W. G. PERRY had the best wreath, formed mainly of Trumpet Daffodils; Mr. MILLS was 2nd.

Mr. MILLS was 1st with a very tasteful effect of Daffodils, they being employed with an excellent effect on a Marching stand; Mr. H. WELLS was placed 2nd.

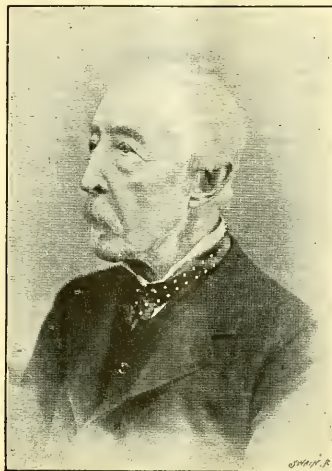
Baskets of Narcissus were a very pleasing feature, the best coming from Mr. G. W. MILLER; Mr. R. W. GREEN, Wisbech, was 2nd.

Prizes were offered for six foliage plants, and Mr. J. BUTTER, gr. to Dr. MARSON, Wisbech, took the 1st prize with very fine specimens of a vigorous form of Arisaema excelsa, a fine specimen of the variegated form of Arisaema excelsa, a Yucca aloefolia variegata, and three others.

Mr. MILLER had the best six flowering-plants—Azaleas, Cinerarias, Clivellas, &c. Some capital Calceolarias were also shown, as well as some good low standards of Azalea indica.

Of other cut flowers, Tulips were shown in collections; also Auriculas, Primroses and Polyanthus, Paeonies, and boxes of cut flowers, gathered in the open, which contained many pretty subjects.

A special prize, offered for the best bunch or bloom in the show, was won by Mr. G. W. MILLER, with a bunch of fine blooms of Narcissus Glory of Leyden, finely developed.



THE LATE COLONEL TREVOR CLARKE.

Obituary.

COLONEL TREVOR CLARKE.—Old Fellows of the Royal Horticultural Society will receive the announcement of the death of this famous horticulturist and lovable man with the deepest regret. He died on the 11th inst., in his 84th year. At one time, and, indeed, for many years, he was one of the most active members of the Society, having ever its truest interests at heart, and serving on the Council and on the Scientific Committee. To the latter body in its palmy days, his varied and extensive knowledge and his great experience as a cultivator were of the greatest service, and he had ever something new or interesting to exhibit. It was, in addition, to a cultivator and hybridiser, a botanist, a chemist, an entomologist, and a scholar; and those who were associated with him can never forget his quiet humour, his imperturbable good temper, and geniality. In 1891, Colonel Clarke was a recipient of a Vetchian Medal, on which occasion we wrote the following note, which is as applicable now as then:—

"Of late years we have not been privileged to see so much of him, but those who remember the Royal Horticultural Society, and the Scientific Committee some twenty years or more ago, will remember also how large a part Col. Trevor Clarke—he was Major then—played in all matters relating to scientific horti-

culture. He brought to bear the resources of science and of botany on horticulture, and was rarely without some interesting object to exhibit and comment upon. As a cultivator, Col. Clarke was very successful, and as a hybridiser and cross-breeder, and a selector, achieved much success, as witness the Celery called after him, and still in favour, and the very useful Begonia Waltonensis. But the most important work in which he was engaged was in cross-breeding Cotton, with a view to producing improved varieties. This necessitated, especially during and after the Cotton Famine, a long and exhaustive investigation into the natural history and methods of improving the varieties of Cotton of the genus Gossypium; and such was the success of his experiments, that a gold medal was awarded to him by the Cotton-supply Association of Manchester (and a special gift from the then Emperor of Russia). Many will remember at the South Kensington Exhibition of 1872, the house that was erected for the growth and display of various kinds of Cotton plants, and the very instructive exhibition therein arranged. Col. Clarke worked on the principle of taking the pollen from the wild forms, as nearly as he could do, and applying it to the Sea Island, New Orleans, and other approved varieties. The improvement was obvious, even in the first generation. Some details concerning this work will be found in our volume for 1872, p. 603 and p. 799; and a lecture by Col. Clarke himself was reported in our columns in 1865, p. 366." In Burbridge's *Cultivated Plants* is a list of over thirty hybrid Begonias raised by Col. Clarke, and an abstract of his work in hybridising Cottons (p. 388).



[The term "accumulated temperature" indicates the aggregate amount, as well as the duration, of degrees of temperature above or below 42° Fahr. for the period named; and this combined result is expressed in Day-degrees—a "Day-degree" signifying 1° continued for twenty-four hours, or any other number of degrees for an inversely proportional number of hours.]

Districts. Above (or below) the Mean for the week ending April 10.	TEMPERATURE.				RAINFALL.	BAIROT SUN.				
	ACCUMULATED.									
	Below 42° for the Week.	Above 42° difference January 8, 1897.	Below 42° difference from Mean since January 8, 1897.	More (or less) than Mean for the Week.						
0	2	14	35	10.0	aver 5	67	11.3	41	21	
1	4	14	40	22	+ 10	60	6.9	42	23	
2	4	11	30	+ 34	55	61	6.0	44	25	
3	4	17	32	+ 34	98	1	6.0	7.4	38	25
4	4	17	32	+ 20	89.0	aver	57	8.3	34	24
5	2	37	12	+ 45	150.0	aver	53	9.7	38	25
6	3	14	28	18	10	5	61	11.3	37	23
7	1	14	24	21	63	1	64	8.5	40	23
8	2	37	10	+ 46	115.6	+ 46	70	14.3	32	26
9	0	37	17	27	+ 2	+ 8	71	10.3	29	24
10	2	37	13	+ 30	27.7	+ 67	13.0	26	27	
* 1	33	0	+ 106	76.5	+ 75	12.8	31	31	27	

The districts indicated by number in the first column are the following:—
0, Scotland; 1, Principal Wheat-producing Districts—1, Scotland, E.; 2, England, N.E.; 3, England, E.; 4, Midland Counties; 5, England, including London, S.; 6, Principal Grassing, &c., Districts—6, Scotland, W.; 7, England, N.W.; 8, England, S.W.; 9, Ireland, N.; 10, Ireland, S.; * Channel Islands.

THE PAST WEEK.

The following summary record of the weather throughout the British Islands for the week ending April 10, is furnished from the Meteorological Office:—

"The weather continued very unsettled, with frequent rain in Ireland and the south and south-west of England;

but in all the northern and eastern districts it was farther than of late, and the rainfall slight. Thunder-storms occurred over the south of England on the 7th.

The temperature was below the mean in all districts, the deficit ranging from 1° in the Channel Islands to 4° over the northern, eastern, and central parts of Great Britain. The highest of the maxima were recorded either on the 8th or 9th, and ranged from 58° in 'Scotland, E.,' and 57° in 'England, S.,' and 'Ireland, S.,' to 65° in 'England, N.E.,' and 'Scotland, W. The lowest of the minima, which were registered on the 5th, were again very low for the time of year. They ranged from 16° in 'Scotland, E.,' and from 23° in 'Scotland, N.,' to 30° in 'England, S.,' 33° in 'Ireland, S.,' and 36° in the 'Channel Islands.'

"The rainfall was much more than the mean in 'England, S.W.,' 'Ireland, S.,' and the 'Channel Islands,' and rather more in 'Ireland, N.' In the 'Midland Counties' and 'England, S.' the fall just equalled the normal, while in all other districts there was a deficit.

"The bright sunshine exceeded the mean over the north of England and the north and east of Scotland, and just equalled it in the 'Midland Counties' and 'Scotland, W.' In all other parts of the kingdom there was a deficiency. The percentage of the possible duration ranged from 44 in 'England, N.E.,' 42 in 'Scotland, E.,' and 41 in 'Scotland, N.,' and 'England, N.W.,' to 26 in 'Ireland, S.,' and 23 in 'Ireland, N.'"

MARKETS.

COVENT GARDEN, APRIL 14.

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

s. d. d.		s. d. d.	
	Anemones, per doz. bunches ...	1 6	2 6
	Aruno, p. 12 bunches ...	3	0
	Azalea, doz. sprays ...	0 6	0 9
	Bouvardias, per doz. bunches ...	0 6	0 9
	Caribean, per doz. bunches ...	1 0	3 0
	— Blooms ...	1 0	3 0
	Daffodils, various, doz. bunches ...	1 0	3 0
	Eucharis, per dozen ...	3	0
	Hyacinth, 12 sprays ...	1 0	4 0
	— (Dutch), boxes ...	1 6	4 0
	— wh. (French), per bunch ...	3 0	4 0
	Lilium Harris, per doz. bunches ...	3 0	6 0
	Lily of the Valley, dozen sprays ...	0 6	1 0
	Maidenhair Fern, per doz. bunches ...	4 0	8 0
	Marguerites, per 12 bunches ...	2 0	4 0
	Mignonette, per doz. bunches ...	4 0	6 0
	Narcissus, various, per doz. bunches ...	1 6	3 0

ORCHID-BLOOM in variety.

FRUIT.—AVERAGE WHOLESALE PRICES.

s. d. d.		s. d. d.	
	Apples, Tasmanian, per case, selected samples ...	14	0 16
	— per case, ordinary samples ...	7	6
	Figs, per doz. ...	8	0 12
	Grapes (new), Channel Islands, per lb. ...	3 6	4 0
	— Belgium per lb. ...	2 6	3 0
	— Gros Colman, selected, p. lb. ...	3 0	5 0

VEGETABLES.—AVERAGE WHOLESALE PRICES.

s. d. d.		s. d. d.	
	Artichokes, Globe, per doz. ...	2 6	3 0
	— Chinese (chrysanthemum), per lb. ...	0 2	—
	Asparagus, English, per bundle ...	4 0	5 0
	Beans, French, p. lb. ...	10	1 0
	— Madras Kidney, per lb. ...	2 6	3 0
	— of 8 to 10 lb., ...	2 6	3 6
	Cauliflowers, Corona-wall, per crate ...	16	0 18
	Cucumbers, home-grown, select, per doz. ...	3 0	3 6
	— do., per dozen ...	2 6	2 6
	Horseradish, English, per bundle ...	1 6	—
	— Foreign, per bundle ...	0 6	—
	Mint, per bunch ...	0 6	—
	Mushrooms (Indoor), per lb. ...	0 8	0 9

POTATOS.

Trade a shade firmer for good samples standard colour. Dumber Maincrop, 75s. to 85s.; Saxons, 70s. to 75s.; Lincoln Saxons and Maincrop, 40s. to 70s.; do., Giants, 45s. to 60s.; other descriptions, 30s. to 60s. John Bots, Wellington Street, Covent Garden.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

s. d. s. d.		s. d. s. d.	
	Adiantum, per doz. ...	4 0	12 0
	Aspidistra, per doz. ...	12	3 0
	— specimen, each ...	0 15	0 30
	Azalea, per doz. ...	18	0 30
	Cinerarias, per doz. ...	6 0	10 0
	Cyclamen, per doz. ...	9 0	12 0
	Dracaena, each ...	1 0	7 6
	— various, p. doz. ...	12	0 24
	Ericas, various, per doz. ...	0 18	0 30
	Evergreen Shrubs, in variety, doz. ...	6 0	24 0
	— Cyclamen, doz. ...	0 12	0 20
	— various, doz. ...	5 0	12 0
	Ficus, per doz. ...	12	0 30
	— specimen, ea. ...	10	0 84
	Polargoniums, per doz. ...	12	0 30
	— do., per doz. ...	6 0	9 0
	Spiraeas, per doz. ...	6 0	9 0

ROOTS FOR THE GARDEN in variety coming very good.

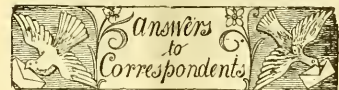
SEEDS.

LONDON: April 14.—Messrs. John Shaw & Sons, Seed Merchants, of Great Maze Pond, Borough, London, S.E., write that a fair number of consignment orders for these seeds required for immediate sowing now comes to hand; these are executed at the low level of values characteristic of the present remarkable season. Choice samples of Grass and Clover seeds are just now obtainable at very tempting rates. France has been taking a heavy toll of the seed. Koenigsberg Tares favour buyers. English Saffron continues cheap. The new Niger and Sunflower seeds just landed, coming to a bare market, are in brisk request. For Hemp and Canary seed the demand is meagre. Mustard and Rape seed are strong. There is a rather better sale for Peas and Haricots. Scarlet Runners show no change. Linseed is firmer.

VARIORUM.

SKELETON LEAVES.—To skeletonise leaves,

which, by the way, should be of mature growth, they must be macerated in rain-water for several weeks, turning them about carefully daily, and giving occasional rinses, or using a very soft brush, to remove the decaying matter. When the latter has quite disappeared, the undamaged skeletons should be selected from the imperfect specimens, and immersed in a very weak solution of common chloride of lime until sufficiently bleached, rinsed well in running water, and finally laid on a blotting-pad to dry. An effective way of mounting skeleton leaves is to fix them on a background of dark-coloured velvet, and either make up into the form of a book or placed under a glass cover on an ornamental stand.



BOOKS: *Bamboos*, H. Papworth, New Orleans.—*The Bamboo garden*, by A. B. Freeman Mitford, C.B. (Macmillan & Co., Limited). London: Bedford Street, W.C.—Mr. W. J. Bean's *Classification of Bamboos*, given in our pages in 1894—viz., on February 10, 17, and 24; March 10, 24, and 31, with figures, might be of use to you.

CARNATIONS: *Close*. Certain varieties are apt to uncurl their blossoms mainly in early spring. It may be that the action is subjected to check. You appear to have given your plants correct cultivation, and future flowers will doubtless be perfect.

CLIVEIA AFTER FLOWERING: *J. Paton*. If the roots are very tight in the pot, after the plant a larger pot, otherwise it will suffice to pick out the inert soil at the top and replace it with fresh loam, making this quite firm with the fingers. Do not use a rammer, the soft, fleshy roots being easily injured. Put the drainage in good order, Cliveias needing plenty of water during the summer. The soil for repotting a plant may consist of turfy loam of good quality, one quarter of the whole rotten manure or leaf-mould, and one-eighth sharp sand. Do not shift into a pot that is more than 2 inches larger in diameter than the pot the plant grew in. Afford ample drainage of large crocks, and see that there is a close layer of turfy bits over the latter, to preserve good exit for the water, for at least two years. Keep in the greenhouse, or in July and August in a warm spot out of doors.

LAWN TENNIS COURT: *C. W.* You should send to Mr. Upcott Hill, Bazaar Offices, 170, Strand, W.C., for his manual on the game. It costs only a few pence.

NAMES OF FRUITS: *East Norfolk*. Sturmer Pippin.—*A. G. Wiest*. Rosemary Russet.

NAMES OF PLANTS: *Correspondents not answered in this issue are requested to be so good as to consult the following number.*—*F. G. S.* *Odontoglossum luteopurpureum* of the best type. Some of the varieties are very much inferior to this.—*H. J. W.* *Dendrobium tottile*; easily determined by its twisted sepals.—*R. T.* *Dendrobium transparens*.—*W. Moryan*. *Hoya multiflora*—native of Malay Archipelago, not South America.—*Jane Eyre*. *Furcraea suspensa*.—*A. Hills*. *Asparagus Sprengeria*.—*H. B.* 1, *Vanda cristata*; 2, *Dendrobium aurum*.—*W. P. Lincoln*. 1, *Davallia platyphylla*, often called *Microlaelia platyphylla*; 2, *Pteris umbrosa*; 3, *Adiantum trapeziforme*; 4, *Adiantum tenerrim*; 5, *Adiantum cardiocladon*; 6, a variety of *Adiantum capillus veneris*.—*H.* A superb variety of *Dendrobium Falconeri giganteum*.—*W. L.* Your hybrid *Cyrtopodium* seems to be between *C. venustum* and *C. Hookeri*, and is similar to that called *C. x Cassiope*.—*J. P. P.*, *North Britain*. *Broughtonia lilacina*, more generally called *Laeliopsis dominicensis*.—*T. F.*, *York*. A similar variety is known as *Dendrobium nobile giganteum*. Yours are very finely coloured.—*A. B.* 1 and 2, both *Oncidium luridum guttatum*; 3, *Selaginella caulescens*; 4, *Selaginella umbrosa*; 5, *Selaginella Mertensii*; 6, *Cyatodea fulgida*.—*J. L. Lincoln*. The miniature form of *Adiantum gracillimum* you have raised has also previously been raised. It is, as you say, a very pretty variety for using with cut flowers.—*T. B. and L. M.* 1, *Nephrodium molle*; 2, *Selaginella umbrosa*; 3, *Selaginella caulescens*; 4, *Selaginella caesia* (the last three mosses); 2, *Blechnum polydorioides*; 3, *Nephrolepis exaltata*; 4, *Athyrium filix foemina*; 5, *Sand* 6, *Gymnogramma ochracea*, Gold Fern; 7, *Pteris serrulata cristata*; 8, *Asplenium foeniculaceum*; 9, *Davallia bullata*, the light green; 7, *Davallia Tyermannii*, the dark, thick frond. The specimens were mixed, and so we were unable to say which belonged to each set. Please, when sending again, have the numbers all different.—*T. F.*, *Edinburgh*. We do not undertake name varieties of florists' flowers.—*G. W. B. and G. A.* *Daffodils* are now florists' flowers. We cannot undertake to name them. Send them to some grower.

NARCISSEUS: *Anxious One*. There is yet time to dig the land after dressing it with gas-lime before planting the bulbs. Instead of table Mustard, you should use the Mustard "dress," obtainable of the manufacturers. Between the rows of bulbs sow Mustard or Lettuce.

PEACH-TREE DEAD: *E. B.*, *West Cross*. The soil sent seems to be of a healthy sort, and is not the cause of the death of the tree. Please send roots, and their appearance may throw some light on the matter.

SALT ON ASPARAGUS BED: *R. H. W.* The quantity of salt was too heavy a dressing by one-half to be given at one time; but the quantity of rain that has fallen of late may so lessen its effect on the plants that no harm may have been done.

SHOWING FOLIAGE PLANTS IN COMPETITION: *Flower Show*. The schedule says six varieties, and you would be within your right to show six *Crotons*, six *Dracaenas*, or six *Palms*, &c., but that is probably not the meaning that the schedule-framers intended to convey. It is six distinct genera, and we think that if you showed two species of *Palms* the judges would disqualify the exhibit.

VINE LEAVES: *Enquirer*. Too much humidity, and too little ventilation.

COMMUNICATIONS RECEIVED.—*J. R. B. W. P. C.*, do. *R. P. A. W.*, *Burlington, U.S.A.*—*L. G. W. D. E.*, *Chelmsford*.—*J. B.*—*Rev. D. W. W. K. J. G. R. F. A. W.*—*D. T. F.*—*A. C. F.*—*W. H. S.*

SPECIMENS, PHOTOGRAPHS, &c. RECEIVED WITH THANKS.—*J. R.* (many thanks—often given)—*D. T. F.*—*Lettlicer* of files.

CONTINUED LARGE INCREASE in the CIRCULATION OF THE "GARDENERS' CHRONICLE."

IMPORTANT TO ADVERTISERS.—The Publisher has the satisfaction of announcing that the circulation of the "Gardeners' Chronicle" has, since the reduction in the price of the paper, increased to the extent of more than 90 per cent., and that it continues to increase weekly. Advertisers are reminded that the "Chronicle" circulates among GENTLEMEN, AND ALL CLASSES OF GARDENERS AND GARDEN-LOVERS at home, that it has a specially large FOREIGN AND COLONIAL CIRCULATION, and that it is preferred for reference in all the principal Libraries.



THE

Gardener's Chronicle.

SATURDAY, APRIL 24, 1897.

AMELANCHIERS.

OF the numerous trees and shrubs now in flower, or rapidly approaching that state, few are so beautiful or attract so much attention as the Amelanchiers. It is not only the snowy whiteness and abundance of the blossom that arrest the eye, but the singular grace and lightness of the trees as a whole are scarcely rivalled by any other in flower at the same time. There are four species in cultivation, every one of which is valuable. They are as much to be commended for the smallest as for the largest of gardens, being of perfect hardiness, and thriving in any soil that is of average quality. The generic name is said to be derived from "Amelancier," the common name for *A. vulgaris* in the South of France. The only one of the American species well known in this country is *A. canadensis*, which, like *A. vulgaris*, is usually a small tree. Some of its forms, however, are purely shrubby, and this character pertains also to another American species — *A. oligocarpa*. These shrubby kinds are but little known, and as they are adapted for situations unsuited to the more tree-like types, it will be worth while, perhaps, to pass the genus in review, especially as the Western Shad-bush of North America — *A. alnifolia* — valuable on account of flowering later than the others, is also comparatively unknown. Besides their spring beauty, the Amelanchiers have an additional attraction in the rich autumnal colouring of their foliage. In sunnier climates than ours they are valued for their fruits, in the United States especially the native species are being cultivated for them alone, and promise to rank among the most useful of native fruits.

The following are the five species known; for the copious synonymy (*A. canadensis* alone has upwards of twenty synonyms) the reader is referred to the *Kew Hand-List of Hardy Trees and Shrubs* :—

A. alnifolia, North America.

A. canadensis, North America, China and Japan (syns. *A. Botryapium*, *A. asiatica*).

A. oligocarpa, North America.

A. vulgaris, Europe.

A. parviflora, Asia Minor.

A. CANADENSIS (THE JUNE-BERRY).

In many respects this is the finest of all the Amelanchiers, growing to greater size than any, and reaching in this country heights of 20 to 40 feet. In North America, specimens have been found 50 feet high, with trunks $1\frac{1}{2}$ to more than 2 feet in diameter. On the other hand, it is often a mere shrub only a few feet high. It varies considerably in time of flowering, some trees being past before others are in full beauty, but the average date

is the second and third weeks in April. The leaves are ovate, more or less pointed, frequently cordate at the base, finely toothed, and on first opening are covered with a greyish-felt beneath, but afterwards become nearly smooth; they vary in length from $1\frac{1}{2}$ to 3 inches. The flowers appear in racemes, 3 to 5 inches long, and are pure white; the strap-shaped petals about three-quarters of an inch long. Its fruits are produced every year at Kew, and are globose and of a purplish-red. It is one of the freest flowering of all hardy trees, and each spring is a mass of white; the thin, graceful habit, together with the elegance and lightness of the racemes, give it a charm few others surpass. This species has a wide distribution in Eastern North America, stretching from Newfoundland southwards to Florida. It shows, in consequence, much variation in size and mode of growth, as well as in the characters of flower and leaf. Many of the varietal names that were given to these different forms are no longer retained. The following variety, however, has been considered sufficiently distinct to stand :—

Var. oblongifolia.—As represented at Kew, this is a dwarf shrub, 3 to 4 feet high, producing sucker-growth like a *Spiraea*, enabling it to be propagated by division. Its leaves are broader than those of the type, and not so distinctly toothed; they are also more tomentose. The flowers are in shorter racemes, and are individually smaller. The plant is of sturdier growth, and will flower when under one foot high. In a state of nature it does not reach so far to the south as the ordinary *A. canadensis*, being found chiefly in the north-eastern United States, and in Quebec and Ontario. A group of about a dozen plants flower every spring in the collection of Rosaceae at Kew a fortnight later than the type. It is rare at present, but well deserves an extended cultivation; in the United States it is greatly valued for its fruits, and is popularly known as "Success" Juneberry.

The Amelanchier, found in Japan and China, and known as *A. asiatica*, is included under this species by several botanists, including Maximowicz. As a cultivated plant little appears to be definitely known about it, but specimens in the Kew Herbarium, gathered by Dr. A. Henry and by Dr. Faber in China, show the same leading characters as the American *A. canadensis*.

A. ALNIFOLIA (WESTERN SHAD-BUSH).

This is a native of Western North America, and was at one time regarded as a geographical variety of *A. canadensis*. It is now generally held to be specifically distinct, although some of the forms at the eastern limits of its distribution (and it reaches as far east as the Great Lakes) closely resemble *A. canadensis*. It is, in rare instances, a tree over 30 feet high; but, as a rule, is a small tree or shrub, 6 to 12 feet high, of more erect growth than *A. canadensis*. From that species it is, when in leaf, easily distinguished by the broader, shorter leaves, the teeth of which are much coarser, and confined to the terminal part, the margins at the base being quite entire. It flowers in May (and thus later than the other), the shorter, denser racemes bearing flowers 1 to 2 inches in diameter. It flowers it is scarcely so ornamental as *A. canadensis*. The fruits are larger than those of that species, measuring occasionally nearly 1 inch in diameter; they are of a purple or almost black colour, and covered with a glaucous bloom. In a wild state their edible quality varies greatly, but at their best they are very sweet and juicy. David Douglas was the first to introduce this species to Europe, sending it home, according to Lindley, in 1826. It had, however, been known as long before as 1804, when the first overland journey from the Atlantic to the Pacific, in high latitudes, was made by the expedition under Lewis and Clarke, the members of which found the fruits of this Shad-bush in great quantity, and a great help to them when food was scarce.

A. OLIGOCARPA.

Of the American species this is the rarest in cultivation. Unlike the two just described, it never becomes a tree, and rarely exceeds 4 feet in height. The leaves are glabrous, except when quite young, oblong, and sharply toothed. The greatest distinction between this and the other Amelanchiers is in the mode of flowering. It does not produce its blossoms in racemes as they do, but singly or in pairs (rarely in threes or fours), on long stalks from the nodes on the whole length of last year's wood. A plant at Kew, which this year was the earliest of all the species to flower, produced them chiefly in pairs, each about one inch in diameter, with pure white, obovate petals. The fruit is oblong, of a dark purplish-blue, and is said to have a sweet and more decided flavour than that of *A. canadensis*. Very few plants of this promising shrub exist in this country, but it is to be hoped it will soon become more plentiful. It does not extend so far south as the other American species, being confined to the North United States and Canada, where it inhabits swamps and mountain bogs. In spite of this it thrives in rich and ordinarily moist soil, and improves under cultivation.

A. VULGARIS (THE SNOWY "MESPIUS").

For over three hundred years this, so-called "Snowy Mespilus," has been cultivated in England. It varies in size from a small tree, 15 to 20 feet high, to a shrub one-third that height. Its leaves, like those of *A. canadensis* (which it much resembles) are very downy beneath on first opening, but soon become smooth; they are roundish-oval, serrated (especially towards the apex), and vary in length from 1 to $2\frac{1}{2}$ inches. It produces its pure white flowers in racemes, which appear in great profusion during April, followed by black-purple fruits about the size and shape of a Black Currant. This species is a native of Europe, and is one of the loveliest of the small trees or shrubs found at the middle elevations of the Alps and Pyrenees. It reaches eastward as far as Crete and Dalmatia, where the more pubescent, shrubby *var. cretica* appears. Of the other so-called varieties, that named *integrifolia* is, perhaps, the most distinct, its leaves being quite entire.

A. PARVIFLORA.

Little has to be said of this species at present. I have not seen it alive, and am not aware of its being in cultivation in this country. It is one of Boissier's species, and is a native of Asia Minor. The following description has been made from dried specimens :— Leaf elliptic or obovate, usually less than half-an-inch long, slightly serrate, petioles and under-surface thickly covered with whitish tomentum. Flowers a little over half-an-inch across, with obovate petals, and produced in short racemes 1 to 2 inches long. It is apparently a shrub. *W. J. Bean, Kew.*

NEW OR NOTEWORTHY PLANTS.

ODONTOGLOSSUM RUCKERIANUM OCCELLATUM.

I HAVE long thought of the so-called *O. Ruckerianum* was none other than a form of *Andersonianum*, named by Prof. or Reichenbach nearly thirty years now, and my impression is confirmed by the excellent materials before me, taken from a plant in flower in the collection of William Thompson, Esq., Walton Grange, Stone, Staffordshire, which was exhibited at a recent meeting of the Royal Horticultural Society. The form is precisely similar to that of the original named plant, showing the parentage of crispum and odoratum, but the size of the segments is greatly increased, and the colouring matter more pronounced and more beautiful, yet quite unworthy of specific distinction. If priority is to be regarded, this and all *Ruckerianum*s must be relegated to *Andersonianum*.

The sepals are somewhat sagittate, the standard one being the best formed of the three; ground colour flushed rose, clear and with crowds of solid chocolate spots, varying in size. The petals are ovate-acuminate, wavy towards the edges, and with a whitish ground

colour from the base to two-thirds of their length, and flushed towards the spear-like point. The spotting here is more minute, and a little less plentiful than upon the other limbs, but the chestnut colour is equally high. The lips conspicuously broad at the base, contracting towards the centre, and expanding at the extremity. A fine shade of yellow is planted in the call, shading out to bluish-white, with a single large chocolate blotch right in the centre of the limb, with a few subsidiary spots on the shield. The convex column stands boldly in relief. For richness of colouring, shading, and spotting it comes nearest to *O. crispum* Ashworthianum, showing those rare vagaries which too seldom come to us from a native habitat. The plant was bearing seventeen flowers on a branched spike. *J. Anderson.*

ORCHID NOTES AND GLEANINGS.

ORCHIDS AT WALTON GRANGE.

THIS place is situate near the town of Stone, on the banks of the Trent, and is owned and tenanted by William Thompson, Esq. (Mr. Stevens, gr.), whose chief hobby for the last thirty years has been the cultivation of Orchids. His gardener has been with him for that long period, and has had the knack of cultivating that interesting family to some purpose. It is quite fifteen years since the writer last visited the place, along with the late Zadok Stevens, of Trentham. Then it was remarkable for many things, intertropical and cool. *Odontoglossums* were always a feature, but *Dendrobiums*, *Cattleyas*, *Masdevallias*, and all showy species were also well cared for, together with many other species that one does not find in general collections. Now the same classes of plants are conspicuous, and most of them show the careful hand of cultivation. More than that, the collection has been carefully weeded out, so that nothing but of sterling value and prepossessing appearance remains. The houses, which have been increased as occasion required, are neither large nor lofty, with the exception of one that, in olden times, had been used for conservatory plants. They have no pretensions to exterior grandeur, but appear to have been constructed for the well-being of the plants they contain. There is plenty of light; the heating-apparatus is arranged intelligently; opportunities exist for obtaining atmospheric moisture, and for giving ample ventilation. The roofs are not lofty, yet most of the houses are comfortable for walking in.

Odontoglossums are the chief feature, and a most remarkable display of racemes and spikes met the eye during our visit. It is impossible to find a better grown and flowered batch of those quaint forms, where a mixture of brown, fawn, chestnut, Indian-red, various shades of yellow and white, get commingled, such as we see represented in *lylrix*, *luteo-purpureum*, *scepterum*, *Coradinci*, *Wilkeanum*, which has been reproduced here by crossing. This is a beautiful form, the shaded yellow, as if it had been dipped in melted butter, being very striking, with its three chestnut orbicular spots planted in the centre of the nicely-formed labellum, showing a mixture altogether of the parents, *triumphans* and *Pescatorei*. *O. r. di-tum* was a picture, with its straight stout spike of thirteen flowers, in which the whole of the segments are of similar oblong form, and stand along with the lip on a plane. The grand racemes of *O. Halli* towered above their neighbours, and in that show-house alone there would be 200 spikes of that particular division of *Odontoglossa*. Of course, *O. crispum* is strongly in evidence, and so is *O. Pescatorei* in some beautiful forms; and numbers of *O. Andersonianum*, varying in ground colour from white to a mixture of lemon and yellow, some profusely spotted, others only partial. This house would be 70 by 12 feet.

Another one of similar size standing at right angles is equally noteworthy. We must not omit to note a magnificent specimen of *O. novium majus*, with quite twenty leads, and promising a fine crop of bloom.

In this house, too, is growing in tubular rafts *Vanda Kimballiana*, and also *V. Amesiae*, both enjoying the cool moist atmosphere. The linear-bulbed *Dendrobium*, *D. longicornum*, was in the pink of health, showing that infundibulum, Jamesianum should not be coddled in heat. *Masdevallia Shuttleworthii*, with dozens of flowers with a singularly beautiful yellow-rayed standard, points to this as one of the chief of the colour. It is long since we came across *M. ignea violacea*, which, with a well-developed ignea by its side, showed a striking contrast. In a span-roof-house about 30 by 40 feet were some of the specimen *crispams*, and grand plants they were, with roundly-ovate plump pseudo-bulbs. One named Alfred Thomson, with ten great bulbs, was conspicuous. *Odontoglossum hastilabium* was a giant in growth and spike, doing fine along with a superb collection of *Laelia anceps* in all its forms and colours.

The Cattleya-house is 60 feet by 16 feet. The quantities of flowers of *C. Schroderi*, and the great variety of shades, together with their sweet fragrance, command attention; the white and intermediary shades contrast well, and the brighter labellums of many of the forms of *C. Trianae* cast a glow over the house. The *Laelias*, too, were in evidence, the plant of the Waltham Grange form of *Laelia tenebrosa* being still unique.



FIG. 89.—SOPHRONITIS GRANDIFLORA.

Miltonia vexillaria had a good portion of a house to themselves, not over-heated, and scrupulously clean, showing, with their strong growths, what an abundance of fine flowers would in time be evolved. The beautiful paper-white *Masdevallia tovarensis* is also in this house, and without a flaw, as well as a group of *Odontoglossum Harryanum*.

Cypripediums are grown in a limited overhead climate, and nothing was more striking amongst them than a giant form of *Rothschildianum*. Some of the rarer lots, such as *Lawrenceanum Hyeanum*, was noted, and others of the yellow insigne finish, the house measuring 20 by 10 feet, being filled with an assortment of the best slippers.

Dendrobiums are in great variety, generally suspended from the lofty roof of the old conservatory. Some of the forms of noble are beautifully coloured, and the best of the more recent hybrids have been secured.

A convenient room has been constructed for Mr. Stevens, who keeps a set of periodicals for reference, and not the least pleasant half-hour we spent was in company with Mr. Thompson and his gardener, turning up the plates of plants, rare and beautiful, many of which have flowered from time to time in the Walton Grange establishment. *J. A.*

DENDROBIUM AMBOINENSE.

A plant of this rare and singular-looking species is in flower in the collection of Major Joicey, Sunningdale Park, Sunningdale. The large, creamy-white flowers come in pairs. The remarkable lip, which, small in proportion to the size of the flower, exhibits but slight trace of a spur at the base, is folded over the short column; the front of the lip is prolonged into a narrow, slender point, which in colour is reddish at the edge; the base of the lip is yellow, marked with brown, and is furnished with an orange-coloured tubercle and several pairs of smaller one. Mr. Thorne, the gardener, had to remove it from one house to another before he found the right place for it, which is one that is tolerably warm and rather humid.

LELIO-CATTELEYA × DIGBYANO-TRIANAË.

We learn that this fine hybrid, which was first exhibited by the raisers, Messrs. J. Veitch & Sons, Ltd., at the last meeting of the Orchid Committee of the Royal Horticultural Society, has passed into the collection of Sir Frederick Wigan, Clare Lawn, East Sheen. Mr. W. H. Young, Sir Frederick's Orchid-grower, considers that in consequence of the freedom with which one of the parents—*C. Trianae*—grows, the cross will form a cross rival to *L. C. × Digbyano-Mossie*.

LELIA × LATONA (L. CINNABARINA × L. PURPURATA).

Several plants of this fine Veitchian hybrid are at the present time in flower, and two matters noted about them are that, as they increase in strength, the intensity of the purple and orange-vernillion tints in the flowers become more pronounced; and it is noticeable that the colouring of the lip differs in different plants. The first plant to show flower had a lip of purple, with a rose and yellow-coloured tip; and each succeeding variety that has flowered displays the same characteristic in some degree—whilst the latest to flower, which is also the strongest, has a lip of rich purple throughout. This plant has six flowers on a spike, which is the highest number borne by it, though there is reason to suppose that more will be produced.

SOPHRONITIS GRANDIFLORA.

OUR illustration (fig. 89) of this much-admired winter-flowering species, taken from a photograph kindly sent us by Mr. Ernest A. Tucker, of Vernon Lodge, Preston, Brighton, exhibits two plants, one growing on a piece of wood as imported, and bearing thirteen flowers; the other, in a basket, has six flowers. The flowers of the latter plant, Mr. Tucker tells us, differ in shape to those of the former, and are not of such an intense shade of scarlet. *Sophronitis grandiflora* is a native of the Organ Mountains, Brazil, and is the finest of the genus. Its deep crimson-scarlet flowers appearing in November, December, and January, they help to decorate the cool Orchid-house during the gloomiest months. There are two varieties of *S. grandiflora*, one having short obtuse leaves, and very brilliant-coloured blossoms; the other with rather longer leaves and pseudo-bulbs, which some regard as being the same as *S. coccinea*. The plants do equally well in baskets, or secured to blocks of wood in the usual manner.

BASIC-SLAG AS A GARDEN MANURE.

ALTHOUGH basic-slag is now a familiar substance amongst farmers, it is a fertiliser which is rarely used in gardens; but we have found it to be well adapted both for pot-culture, the kitchen and the flower garden, as well as the lawn. Moreover, since it is the cheapest source of phosphate we possess, it is worthy the attention of market gardeners and nurserymen. It has advantages also which no other phosphatic-manure possesses.

The phosphate in basic-slag does not dissolve in water like that in superphosphate of lime, and it is therefore not so suitable for top-dressing as the latter. But 35 per cent. of the phosphoric acid in

basic-slag is soluble in an aqueous solution of carbon dioxide. But soils which are rich in vegetable matter evolve considerable quantities of carbon-dioxide gas owing to the decomposition and oxidation of this organic matter, hence we find that basic-slag is especially adapted for peaty soil, and for kitchen garden soils which have been for years liberally treated with dung. Turfy-loam, which is so much used for potting, also contains much vegetable matter, and very little available phosphate is present; now, the usual practice is to mix bone-manure with this turfy-loam, but we have found that better results are obtained with basic-slag, and at much less cost, provided that the plants receive also a little nitrogen in the form of liquid, either a very dilute solution of nitrate of soda or of ammonium sulphate—but this addition is not always required. Indeed, there is much advantage to be gained by mixing the phosphate with the soil, and only giving the nitrogen when the plants require it. An excess of phosphate in the form of basic-slag will not do any harm; it will not produce rank sappy growth, and it is not washed out of the soil. But an excessive dose of rich nitrogenous manure is never profitable, and may often do much harm; it causes great leaf-development, and retards ripening.

Basic-slag, as its name implies, is basic in its reaction; that is, it neutralises free acids, and since soils which contain much vegetable matter or humus are frequently acid, basic-slag neutralises this acidity by reason of the lime which it contains. Superphosphate is an acid manure, containing soluble acid phosphate, and although it is a valuable fertiliser, it should not be added to a soil which is already acid. If Turnips, Cabbages, or Cauliflowers are attacked by "finger-and-toe" or "anbury," they are always worse if the land has been dressed with superphosphate, the reason apparently being that the spores of the fungus germinate more readily in an acid medium. But the above named plants require a ready supply of soluble phosphate if they are to thrive well; therefore, if the land is infected with finger-and-toe, and if the planting of Cruciferous plants is unavoidable on the infected land, do not use superphosphate, but use basic-slag.

The effect of basic-slag is like that of superphosphates when it is applied to lawns—it causes White Clover to be more abundant, and it tends to remove moss.

Most crops are benefited by basic-slag, but particularly Beans and Peas. We have carried out several experiments on market-gardens, using different manures on Peas and on Beans, and we have always found this manure to be useful; the increased crop obtained by its use has paid for the outlay on the manure several times over. Phosphates, when applied to these crops, cause an earlier maturation to take place, and this fact is an important one in the case of early Peas, and also when French Beans are forced. Nitrogenous manure, on the other hand, may cause the crop to be late; these leguminous plants can obtain sufficient nitrogen from the atmosphere, so that if we supply them with sufficient available phosphates and potash, they will not need any other manure.

The amount of phosphoric acid in basic-slag varies considerably. It ranges from 5 to 20 per cent, which is equivalent to a range of 11 to 44 per cent, of tri-calcic phosphate; this is partly owing to the differences in the amount of phosphorus in the iron ores, and also to variations in the amount of lime which has been added to the molten metal in order to remove this phosphorus. All the slag which is sold as a manure is not basic-slag; recently a sample of slag came under my notice which was being sold for 50s. a ton; it did not contain a trace of phosphoric acid, or any other fertilising substance, and was, indeed, not so valuable as an equal weight of coal-ashes; it was in reality an "acid" slag, and quite valueless.

Basic slag should be ground to an impalpable powder, so that most of it will pass through the standard sieve, containing 120 wires to the linear inch. It is a disagreeable manure to spread evenly on the garden, especially on a windy day—it is blown about

easily, and soon makes one as black as a sweep; in order to avoid this inconvenience, it is better to mix it with some fine damp earth previous to spreading it. It must not be mixed with ammonium sulphate, because the lime in the slag would displace the ammonia and cause a serious loss.

The average amount of phosphoric acid in this manure is about 17 per cent, and of this a dressing of 3 or 4 oz. to the square yard is enough. Its effects are appreciable for two or three years. F. V. Dutton, University College of North Wales, Bangor.

THE ROSARY.

THREE NEW CLIMBING ROSES.

SINCE *Crimson Rambler* proved itself to be such a generally valuable form of the Japanese *Rosa polyantha sermentosa*, three new varieties, raised by M. P. Lambert, of Trèves, have already obtained well-deserved attention. They bear the names of the three Graces—*Aglaia*, *Euphrosyne*, and *Thalia*, and appeared simultaneously. The plants flower on the ripened long shoots of the previous year, exactly as does *Crimson Rambler*, and in bunches of from 30 to 100 blossoms, which expand slowly in long succession. These varieties are not choice seedlings, but the result of artificially crossing *R. polyantha sermentosa* with other varieties, and they differ not so much in habit of growth as in the colour of their small half-opened flowers. Those of *Aglaia* are light greenish-yellow, fairly double, of the size of *R. Gloire des Polyantha*, of a cupped form, and Tea-scented; whilst those of *Euphrosyne* are clear rose, and in the bud-stage bright light carmine-red. The flowers of *Thalia* are clear white.

ROCKERY SHRUBS.

The vegetation of high mountains always manifests, even with shrubs and shrubby plants, the stunted and compact habit characteristic of the alpine flora. On large rocks, especially in the alpine garden, dwarf and trailing shrubs and rock-growing bushes can be arranged so as successfully to suggest a mountainous group. I will mention some species which are especially useful for this purpose.

To begin with, there is the whole series of *Ericas* and *Vacciniums*, known and grown in England better than with us. The genus *Andromeda* yields many varieties elegant in form, with delicate blooms of different colours. *A. calyculata*, *japonica*, *polifolia*, *fastigiata*, *tetragona*, and *lypoides*, though widely known in England, are but little grown on the Continent.

Ericas, generally silex-loving plants, do badly in our country, where Jurassic and calcareous soil is found; but very well in England. *E. carnea* is an exception. It is excellent on sunny rocks, grows on calcareous or siliceous soil, and is gay in early spring in our Yandois mountains, whence it grows down into the plain, cropping up between the rocks and stones, and showing everywhere its very bright rose-carmine blossoms. These flowers last a long time; in a full south position on my rockery I have a large clump of *Erica carnea* which bloomed in mid-January, and is still in full beauty. At the foot of a wall and full south it blooms until Christmas.

Vaccinium and *Oxycoccus* are also silex-loving plants, and found in full beauty along the shores of the Atlantic. But the *Arbutus* is one of the best shrubs for the alpine garden from a decorative point of view. I refer to our *Raisin d'Ours*, *Arctostaphylos Uva-Ursi*, which bears long and full branches trailing on the ground. One plant will sometimes cover four or five square metres. The foliage is persistent through the winter, is dark, dull green, thick and coriaceous; mingled in spring with numerous trusses of rose-coloured flowers, which are succeeded in autumn by bright red berries.

But alpine *Rhododendrons* are among the most valuable of our shrubs. There are three or even four; among them *R. ferrugineum* and *R. hirsutum* are easy to grow, while *R. intermedium* and *R.*

Chamaecistus—the latter beautiful, elegant, with large, clear rose, *Cistus*-like flowers—are very difficult. Like *R. kantschaticum*, this latter *Rhododendron*, found in the mountains of Tyrol, is grown in porous soil, rich in vegetable humus, and in full sun. In Geneva we can only grow it in pots of sphagnum. *Rhododendron* growers and raisers should notice this species, and increase it in gardens.

Aratrage alpina, a Clematis-like plant, with violet-blue flowers, grows wild in copses and woods on chalky slopes among the Alps. It is not common, for its flowers have attracted attention, and reckless gathering has destroyed it in many localities. Thus, at Salève, near Geneva, its only habitat in this district, it has ceased to exist for the last ten years, amateur collectors having taken all, or bought it from flower-sellers in the market. Happily it grows readily from seed or graft, and is growing with various horticulturists. There are varieties with pure white or red flowers which also are cultivated, as *Aratrage sibirica*, *genuina*, and *Wenderothii*. These like partial shade, leaf-mould, and but little interference, as the less they are moved the more they flourish.

Among plants which grow and get lost is the charming *Betula nana*, with leaves shining, round, elegantly-crenulate, with slender, plant branches, and light and delicate habit. It is scarcely 3 feet high, and a great ornament to a rockery. *B. nana* was formerly plentiful, but is now scarce in this country, except in certain boggy places of the Jura plateau, and there it is so poor that it can hardly be said to exist at all. It shares, in fact, the fate of the marsh-flora, which is diminishing under cultivation and the search for peat. But the dwarf Beech still abounds in Polar regions, covers the slopes of the North Cape and the Scandinavian Alps, where it shades the delicate *Diapensia lapponica*. In cultivation it prefers a fresh deep soil and slight shade. It is increased by slips and seeds.

Ephedra helvetica is a curious plant which is found on old walls and the most arid rocks of Canton Valais. It is one of the features of what is known to us as the flora of the "xerothermic" period. It has the peculiar appearance of *Equisetum*, but is not so leafless-looking, as in spring the male plants bear yellowish-green catkins, while in autumn the female plants have bright red fruits or berries, something like those of *Yew*, *Ephedra* being, in fact, closely allied to Conifers.

The existence in our country of a plant which clearly originated in the steppes, and most of the congeners of which, grown in the Asiatic and African deserts, has given rise to much discussion. It is certainly a relic of the flora of a "xerothermic" period which succeeded that of the melting of the glaciers, and its presence among our Valais Alps indicates a climate alternately hot and cold, dry and windy. This curious little shrub, placed in the full sun, soon spreads from a niche or fissure, and its brilliant berries are, in autumn, a great ornament to the alpine garden. There are many other *Ephedra* which also grow in rocks, and are very decorative. There are the foreign species, *E. alata*, *altissima*, *andina*, *campylopoda*, *distachyla*, *fragilis*, *monostachya*, *nevadensis*, and *trifurca*, which are hardy in our climate.

Amelanchier vulgaris is a charming shrub, growing in the chinks of calcareous rocks in full sun, and the stems of which arch gracefully, and are at this season covered with large white flowers, rose-coloured outside, and hanging in axillary clusters. The plant sometimes grows nearly 10 feet high. *Cornus canadensis* and *suecica* are small shrubs with large flowers, which like a sunny position and a peaty soil.

Among the genus *Daphne* we find many acceptable and delicately perfumed plants. *D. Cneorum*, growing on calcareous soil in the Jura and Southern Alps, and also in Hungary and Transylvania, is the best of all; its pretty rose-coloured flowers in little close clusters scent our rocks in May and June, and sometimes appear in the autumn. In firm and heavy soil it succeeds better than in light, and sometimes grows to a considerable size; a sunny situation is preferred. This *Daphne* is known to us as "Thymelée des

Alpes," or "Perles des inoutagnes." There is one variety with large flowers, another with white flowers and variegated leaves. *D. striata* and *Verlotii* are forms of *D. Caeorum*. *D. Blagayana* from the Carniolan and Styrian Alps is a small shrub with decumbent stems, broad persistent oval-oblong leaves, glaucous-green with large cream-white flowers in clusters, and fragrant, opening in March and April; it requires semi-shade, and a porous, well-drained soil. *D. alpina* is a small, stunted bush with tortuous branches, leaves at the summit only, flowers yellowish-white, slightly scented, and succeeded by bright brick-red berries; it requires a calcareous stony soil and full sunshine.

Rhamnus alpina, *pumila* and *saxatilis*, which like chinks in the rock in the full sun; also the alpine willow (*Salix herbacea*, *retusa*, *reticulata*, *serpyllifolia*) have decumbent stems flat on the ground or only a few inches above it, and are also very pretty for alpine rockeries. *H. Correvon*, *Jurina alpina* *d'Acclimatation*, *Geneva*.

ODONTOGLOSSUM CRISPUM VARS. LUCIANI AND LINDENI.

OUR illustrations (figs. 90 and 91), for which we are indebted to the courtesy of MM. Linden, represent two varieties of *Odontoglossum crispum* for which the establishment of the Messrs. Linden, Parc Leopold, Brussels, has of late years been noted. Fine examples have been exhibited at the Royal Horticultural Society's meetings, and have been rendered familiar to us by the illustrations of some of them in the *Lindenian*, and especially in the *Odontoglossum* number, in which eight fine varieties were illustrated, the issue appearing in June, 1896. Nor are the beauties of these fine flowers a barren possession commercially, for the fashion in value was set by fine *O. crispum* *augustum*, for which Messrs. Linden obtained a First-class Certificate at the last Temple Show, and which was illustrated in the *Gardeners' Chronicle*, May 23, 1896, p. 649. That plant was said to have had more than one offer for it up to 300 guineas, at which price it was sold, and those illustrated here were rated at the same value. The *O. crispum* *Luciani* (fig. 90), which variety, when the small plant that obtained a First-class Certificate at the Royal Horticultural Society's meeting on March 23, this year, has had time to develop, will assuredly be a noble variety. It has very fine flowers, white, tinged with rose and blotched with purple-brown; and *O. c. Lindenii* (fig. 91, p. 269) is also a handsome and distinct variety, as a glance at our illustration of the bloom shows.

GARDENING IN RUSSIA.

(Continued from p. 249.)

NURSERIES.—Another important nursery in St. Petersburg is that of Messrs. Regel & Kesselring, which, since the death of the never-to-be-forgotten elder Regel has been carried on in the same manner by his son-in-law, Mr. Kesselring; whilst contrariwise the St. Petersburg Botanical Garden has sunk in the few years that have elapsed since Regel's death, from a garden of the foremost rank to a simple flower-garden in which carpet-bedding plays the chief rôle. If the botanical garden should continue to decline at the present rate, botanists will, in the course of a few years, merely have the remembrance that there once existed a most valuable collection of plants second only to that at Kew.

I served under Regel in the St. Petersburg garden for a period of four-and-a-half years, and was therefore well acquainted with it, and it saddened me to remark how much it had declined; it however did me good to visit Regel's tree nursery. Those who suppose that shrubs and trees alone are to be found here are mistaken, although the collection of these is a very rich one; but still richer is the collection of herbaceous perennials, of which about 2500 species and varieties are grown in the open ground. Shrubs number 750 species, fruits about 4000. It would take up too much space if I were to enumerate all the novelties which I saw, and to do so is unequalled for, seeing that all the names and descriptions are to be found in the nursery list. Only a few novelties—about 300—are not found in this list, and

are, therefore, not for sale. Taking them as they appeared in the borders, I may name the following:—*Dianthus Sterbergi*, *Diphyllea cymosa*, *Gentiana phlogifolia*, *Ledum glandulosum*, *Veratrum Maaki*, *Adonis wolgensis*, *Primula pseudo-Forsteri*, *Lilium Glehni* and *L. cupreum*, *Lychnis lapponica*, *Saxifraga Rocheliana* *caryophylla*, *Anthemis Aizoon*, *Cerastium Lerchenfeldii*, *Lilium avenaceum*, *Dianthus teur*, *Ranunculus bilobus*, *Saxifraga Alberti* and *Thunbergiana*, *Spirea bullata*, *Cousinia Schtchurovskiana*, *Baptisia leucantha*, *Anthericum undulatum*, *Gentiana Regelii*, *Epimedium colchicum*, *Lophanthus chinensis*, *Aquilegia Baulinii*, *Mimulus primuloides*, *Azaleastrum purpureum*, *Iris Alberti*, *Paeonia banatica* and *fulgida*, *Rubia cordifolia*, *Rubus crataegifolius*, *Aralia nudicaulis*, *Salvia Regeliana*, *Arisema amurense*, *Iris archioides*, *Corydalis decipiens*, *Crocus cilicicus* and *carpetanus*, *Tanacetum leucophyllum*, *Inula ensifolia*, *Kitaibelia vitifolia*, *Hugueninia tanacetifolia*, *Thom-*

The general has a partiality for Cycads and Palms, and is the possessor of a very fine collection of these plants, such, indeed, as can only be found in some of the more extensive botanical gardens, no fewer than 207 species of Palms and 68 species of Cycads being represented. Besides these, his glasshouses contain numerous choice plants, as, for example, a large collection of *Acacias*, *Bromeliads*, *Conifers*, and *Crotons*.

The collection of Orchids is also considerable. Another notable garden is that belonging to Mr. Pasterchov, in which I observed a large number of strong plants of *Oviandra frenalistris*. The Palms and Orchids there are also very fine.

IMPERIAL GARDENS.

The Imperial gardens are, as one might expect, on quite another scale of magnificence, as here no expense is spared. Still, great outlay is by no means the only



FIG. 90.—ODONTOGLOSSUM CRISPUM LUCIANI.

masinia verticillaris, *Saussurea deltoidea* and *Russowii*, *Eanbusa* species from Kansu, hardly in St. Petersburg!

Amongst shrubs, *Rhododendrons* stand in the front rank, and besides those incorporated in the catalogue, there are *R. brachycarpum*, *R. campanulatum*, *R. caucasicum*, *R. hirsutum*, *R. kamtschaticum*, *R. lanatum*, *R. parvifolium*, *R. Przewalskii*, and *R. Ungeri*, as well as species *R. lapponicum*, *R. villosum*, *R. myrtifolium*, *R. intermedium*, *R. latifolium*, *R. Cunninghamii*, *R. Rosamundii*, *R. campycarpum*. All of these are hardly at St. Petersburg. The following were likewise observed:—*Lonicera purpurascens*, *Daphne altaica*, *Spirea Hacquetii*, the charming *Philadelphus parviflorus*, *Andromeda Mariana*, *Larix nigra*, *Spirea Humboldtii*, *Lonicera syringantha*, *tangutica*, *nervosa*, *Regeliana*, *Rhamnus dabratica*, *Ribes burenjense*, the new Caucasian *Acer Trautvetteri*, &c.

PRIVATE GARDENS.

Among private gardening establishments, that of His Excellence, General Durnow, takes the first place.

thing needful in cultivating fine plants. The one which had the greatest interest for me were the Taurian garden and the garden at Felagin Ostrow; the former having to furnish the decorative plants for the Winter Palace, and the latter those for the Antischkow Palace.

Owing to the great size of Russian buildings, one can form no idea of the suitability or number of the plants grown for purposes of decoration.

The Winter Palace has a saloon called the Nicholas Saloon, which is decorated with seventy-two Palms of an average height of 8 to 10 yards! The Palms stand in six rows of twelve plants each; and a table surrounds each plant-tub, at which ten persons can be comfortably seated at dinner. The crowns of these Palms do not touch each other, but stand so far apart that each can be seen to advantage. What is of interest to a gardener is that the extreme height and diameter of the tubs are only 75·6 cm. (30 inches), and the court gardener, Von Siemsmeyer, is compelled on account of the tables, to keep to these dimensions.

The Palma remain in the palace from January to May, and in this interval they lose from seven to eight leaves, which must be replaced by an equal number of young ones before the following month of January. This piece of the gardener's art or conjuring trick, as we must call it, is carried out in this wise. When the plants come out of the palace they are turned out of the tubs, the roots severely shortened with an axe, and the ball re-tubbed in a mixture consisting of equal parts of heavy and light turfy loam, mixed with which are 10 to 11 litres of bone-meal, and the plants are then placed on a warm bed in the Palm-house. Here they throw out 7 to 8 new leaves by the new year, and are then transported, often with the thermometer at -20° Réaumur (-45° Fabr.), well packed in thick coverlets, to the Winter Palace.

The number of plants employed in decorations on great occasions amount to 17,000, and at small fes-

I have no intention of noticing all the different species of those plants, but only those which it is rare to see used in the dwelling. One of the most common is *Cissus antarctica*; and almost as common are *Jasminum Sambac* and *Sansevieria guineensis*. Judging by the dimensions of the plants observed in the windows of houses inhabited by the lower classes of the population, these plants are great successes.

At the time of my visit—July—the *Jasminos* were literally covered with bloom. *Bromelias* are greatly admired, and a few amateurs possess large collections of them, likewise of Cactus. Specimens of *Pandanus utilis*, 6 feet in height, and perfectly healthy, and of *Cocos Weddelliana*, were remarked, the latter quite different in habit in old age from what it is when young.

A favourite Orchid, and one that does well in apartments, is *Stanhopea in variis*. Besides *Aralia reticulata*, it is not rare to find specimens of other ornamental species, as *A. Sieboldii* and *A. papyrifera*.

Weise an exceedingly intelligent manager of their public gardens and open spaces. These increase year by year, and at the present time the enormous area that lies between the Winter Palace and the old Admiralty buildings is being converted into an ornamental garden.

The carpet-bedding style still finds many admirers, but the preference for flowering plants of various kinds in place of variegated *Perlagoniums*, and the usual carpet-bed plants, as *Irisine*, *Alternanthera*, *Pyrethrum*, &c., has begun to assert itself; and although the artificial and geometrical forms of the beds are retained, and the planting of large beds with one kind of plant is still carried out, the clipping and shearing of the plants are no longer the fashion, the various designs being filled with plants of varying height, and flowering subjects in greater variety. *U. Dammer*.

FORESTRY.

TYPES OF BRITISH WOODLAND. I

We have said that Oak woods have been modified by modern methods of management into variations from the original type. Although the result of these modifications has, in many cases, entirely obliterated the ancient order of forest scenery, yet, thanks to the planters of the last century, typical Oak woods are still plentiful enough in England. Unlike the Beech, however, the Oak tolerates the presence of many lowly forms of vegetation beneath its deep, but comparatively open crown, and it is only during the earliest stages that the leaf canopy can be kept sufficiently dense to kill surface-vegetation, and if not entirely suppressed over too large an area, it re-asserts itself. When Oak woods have been raised from a thick bed of acorns or plants, and left to fight it out from the start, a crop of fine timber is invariably the result on good soil and a favourable situation.

Uniformity rarely exists over a large area, it is true; but uniformity of soil and other conditions is equally rare, and with a long-lived species, slight differences in vigour or adaptability to the situation, which pass unnoticed in young trees, become more accentuated with age. With the exercise of every possible skill and care, the forester must still learn much in the lands of Nature, and the number of really fine specimens of mature trees to be found upon a given area is usually small in comparison with small or badly-shaped stems, and the poorer the soil, the more numerous the latter become. In most cases, too early and too severe thinnings have been carried out. An old proverb runs: "The Oak will stand bare-headed, but not bare-footed;" but this does not imply that the early training, in the shape of "drawing up," which is necessary in growing good timber of any kind, can be dispensed with in the case of the Oak. If we are not mistaken, the above-quoted proverb is of French origin, and in France a warmer climate renders the preservation of soil-moisture more imperative than with us. Hence the practice which prevails of under-planting middle-aged Oak-woods with Beech or Hornbeam, or of growing these species in combination. These methods of growing Oak might be more often followed on the lighter soils, especially in the south of England, and it is astonishing to find, on even poor sandy soils, Oaks of great length and respectable dimensions, which have been drawn up among Beech trees without artificial interference. Such timber, it is true, is usually of little value for many kinds of work, but is well adapted for cleaving, and several other estate purposes. On fairly dry soils, however, where Oaks of fair quality can be grown, the Beech requires to be kept in check before the Oaks have finished their growth in height, so that the crowns of the latter may develop to the utmost. On heavy soils Beech does not thrive so well, nor is the dense shade of the latter such a desirable condition and in such cases natural herbage usually forms the undergrowth.

The most frequent, and from the sportsman's point



FIG. 91.—*ODONTOGLOSSUM CRISPUM LINDENII*. (SEE P. 268.)

activities from 8000 to 10,000. Moreover, this garden furnishes the Winter Palace with a portion of the flowering plants required, namely, 200 to 300 Camellias, 700 Narcissus, 1200 Tulips, 2500 Crocus, 5000 to 6000 Hyacinths, and 40,000 Lily of the Valley, which is about one-sixth of the entire requirements, the remaining five-sixths coming from Eiler's nursery.

The imperial gardens at Felagin Ostrow resemble the first-named, and together with the park is situated on an island in which nature and art are wonderfully blended. The following plants are regarded as being excellent decorative material, withstanding the inimical conditions of indoor culture better than most others, viz., *Aralia reticulata*, *Codiaeum (Croton) variegatum* var. *Corrieri*, *Cræva salicifolia* (probably saligna), the first two being first-rate plants for apartments.

PLANTS FOR DWELLING-ROOMS.

This reminds one of the plants used for the latter purpose, which I have remarked in St. Petersburg.

I observed several plants of *Cycas revoluta* in good condition. The layman may be surprised to learn that this species is cultivated by the Russian amateur, but the reason is to be found in the long-continued activity of the departed Regel. He was, although a German, the father of horticulture in Russia, which is a fact that cannot be denied.

PUBLIC PARKS.

Before I turn from gardening at St. Petersburg, I must say a few words about the public parks and gardens. The Russian has a great sympathy with Nature, and the vegetable kingdom plays a greater rôle with him, and stirs his feelings much more than is the case with the western European nations. This is made apparent in the immense numbers of the people who visit the numerous parks and gardens of the city. The municipality on its side has done much in tastefully decorating the large squares and "places," of which there is no lack in the more modern parts of the city, and they have got in Mr.

of view, the most desirable form of Oak wood is probably that in which Hazel fills up the space between the trees. This style of woodland varies a good deal as regards the proportion in which timber and underwood bear towards each other. In some cases we find the Hazel simply an undergrowth, and almost entirely shaded by the crowns of the trees; in others the trees are few and far between, and the Hazel coppice forms a goodly proportion of the crop on the ground. The more closely the latter case is approached, the shorter stemmed and more heavily branched do we find the timber. Many fine specimens of Oaks, containing much valuable timber, may be met with, it is true, which have not been subjected to any close struggle with their neighbours; but where such occur, we may safely conclude that soil and situation leave little to be desired, and that even better results might have been obtained with proper treatment. Two cases in point occur to us at this moment, both of which have their existence in two of our royal forests, one a wood of tall, clean, and massive boles, which has evidently been little, if at all, subjected to the process of thinning; the other, in which the trees stand like fruit trees in an orchard, with almost painful regularity, but the produce of which is yet, in principle, branches. One is characteristic of the sylvicultural, the other of the arboricultural, systems of managing the Oak. *A. C. Forbes.*

(To be continued.)

CULTURAL MEMORANDA.

TOREZIA FOURNIERI.

WELL-GROWN plants of *Torezia Fournieri* make a nice edging to a plant-stage in the greenhouse or conservatory, and are useful for mixing with other plants on flower-stands in apartments, &c. The seeds being small, should be sown in pots of light soil, and be slightly covered with fine mould and stood in a moderately warm house. The seedlings should be transplanted as each appear, in pans filled with any moderately rich kind of gritty soil, and later on they may be potted, several together, in 4's, and stood in cold frames after the weather has got warm. *Torezias* are liable to be infested with aphides, to destroy which the plant should be fumigated occasionally. The plants require to be freely supplied with water, and with manure-water when pot-bound.

FRANCOA RAMOSA.

This pretty greenhouse plant may be raised from seed sown forthwith in pans of sandy soil, and stood in a temperature of 60°, and kept moist and shaded from the strong sun. If the seeds are new, germination will soon take place, and, when large enough to handle, the young plants should be pricked off into other pans, and later on potted into 60's, and grown in a house with a mild moist heat for a while, after which they should be afforded a slight shift and be placed in a cold frame. The plant is readily multiplied by division, taking the young side-growth shortly after the plants have flowered, potting them in 60's, and keeping them close in a cold frame placed on the north side of a wall. The leaves should be kept fresh by repeated light syringings. When well established repot them into rich sandy loam and half-decayed leaves, or Mushroom-manure. If stood in a cold frame, not too close together, it winters well, even if light frost get to it. The stoutest of the plants which have flowered may be repotted somewhat low down in the soil, so as to let side-growths make roots in the soil. *H. Marham.*

THE WEEK'S WORK.

THE KITCHEN GARDEN.

By W. POPE, Gardener, Highclere Castle, Newbury.

Carrots, Parsnips, &c.—As soon as the earliest crops of Carrots, Parsnips, &c. appear above ground, advantage should be taken of a dry day to run the Dutch-hoe through the soil, between the rows, which will destroy small weeds, and otherwise benefit the crop by admitting air and sunshine. Thin the plants as soon as the first true-leaf is formed to about 3 inches apart, and in a fortnight or three weeks the second and final thinning may be done; the Early Huru varieties sown for use as pulled being left at

6 inches, while those intended for storing should be allowed from 9 inches to a foot between each plant, the latter distance being necessary to grow good roots for exhibition. After each thinning, give a light dressing of fresh soot, and stir the soil with the Dutch-hoe. If Parsnips were sown in bunches, they should be thinned to a couple in each patch as soon as the plants are seen, and further reduced to one at a later date, to guard against any blight. These may be successfully transplanted if moved with care during showery weather. It is not yet too late to sow seed, if by any chance it may have been neglected earlier; the smaller roots resulting from late sowings are sometimes more appreciated than large produce.

Planting-out Onions for Exhibition.—Onions sown early in the year, and pricked out in boxes, if properly hardened off, are now ready for planting out. Assuming that a plot of ground has been previously prepared by liberal dressings of manure and deep cultivation, it should now be made thoroughly firm by treading whilst sufficiently dry on the surface to prevent the soil sticking to the feet. Then plant in rows 15 to 18 inches asunder, and place the Onions at about 15 inches apart in the rows. Planting may be done with a trowel, and a light soil is preferred, but care must be taken to plant firmly, and just deep enough in the soil to keep the plant upright. It is advisable to select showery weather for this work if possible, but should it be dry at the time, water should be given separately to each plant with a spout-can as each row is finished, and afterwards run the Dutch-hoe lightly through between the rows.

Celery.—Trenches may be prepared at the first opportunity for the earliest batch of Celery, and ground that has recently been occupied by Brussels Sprouts, Broccoli, or similar green crop is very suitable for this purpose. I prefer trenches wide enough to take two or three rows of plants as being economical in space and labour, the produce being in no respect inferior to that grown in single-trenches. Those to contain two rows of plants should be made 2 feet wide and 12 inches in depth when ready for the manure, which should be put in after breaking up the subsoil deeply at the bottom of the trench; procure some well-rotted cow-manure if possible, and after putting in a good depth of this material, return enough of the good surface-soil to plant in. Three feet in the clear should be allowed between the trenches, or 5 feet measuring from centre to centre. These ridges between the Celery can be utilised for planting-out early Lettuce, dwarf Beans, &c. which will be out of the way before the soil is needed for earthing-up the crop. When the trenches are ready and the plants are properly hardened, lift each plant with the trowel, and plant with a good ball of earth attached, watering thoroughly immediately after. Continue to prick-off successional batches in boxes or frames as soon as ready, and supply them at all times with an abundance of water.

THE FLOWER GARDEN.

By CHARLES HERRIN, Gardener, Dropmore, Maidenhead.

Anemones furnish useful plants for filling beds, and flowers for cutting in the early spring. Seeds may now be sown of that pretty-looking variety, *A. coronaria*, for supplying flowering plants next year. The seed-beds or patches should be prepared where the plants are to remain and flower—that is, without transplanting; therefore the ground should be in a fairly good condition, and well tilled, the seeds being sown thinly in drills drawn about 9 inches apart. The seeds can be the more evenly and readily distributed if they are first rubbed and mixed in partially-dry sand.

Sunflowers.—Perennial species may still be increased if necessary by division. Where pieces are cut away from established clumps, the ground should be made quite firm around the remaining portion, and if possible some new and rich soil be worked in around the roots. All the varieties of the *Helianthus multiflorus* section divide safely now, as do also *Helianthus* and *Rudbeckias*, which are nearly allied to the former. Some of the annual Sunflowers are also desirable subjects, both the tall double and the single flowered, as well as the dwarfier growing miniature varieties, the tall named being useful for filling odd corners in herbaceous borders, and for use as cut flowers. The seeds should be sown in large sized 60-pots, two or three in each, thinning the seedlings to one—the strongest of the tall growing varieties, or three of the dwarfier miniature varieties. Till germination takes place, the pots may stand in a

mild hot-bed frame, and the plants gradually hardened off and planted out without further trouble being taken. When planting, scatter a little soot around them to prevent injury by slugs.

Various Operations.—Sowings of Sweet Peas, Mignonette, and other annuals, for affording out-flowers, should be made at intervals of a fortnight or thereabouts during the next six weeks. The pricking-out of seedling *Penstemons*, *Antirrhinums*, *Fernandias*, *Verbenas*, and other similar subjects, should receive early attention, as if allowed to become spindly in the seed-boxes, &c., they seldom attain to the vigour of those that are duly attended to in this respect. Mild hot-beds, on which a frame can be placed, with a bed of about 4 inches in depth of soil, for receiving the seedlings, form the best and simplest means of dealing with large numbers of seedling bedding plants at this season. The lights should be kept close, and the seedlings shaded for a few days from bright sun, gradually admitting more air and light when they are becoming established; eventually thoroughly hardening off preparatory to planting out by the entire removal of the lights, excepting during periods of cold weather.

*Bedding *Pyrolonias*.*—These, if well established, should, as far as convenience affords, be removed to cold pits and frames, or, if coming from houses with a cool greenhouse temperature, may go under a framework of trellising and be covered at night, or when otherwise cold, with mats or canvas. If removed from a warm and moist temperature, they should be kept close in frames or pits for a few days, that is, until inured to the change, and be shaded slightly during bright sunshine, otherwise the foliage may get discoloured. The propagation of various subjects should continue briskly now, and the stock of plants is sufficient for the various purposes intended. *Heliotropes*, *Ageratum*, *Nasturtium*, *Coleus*, and such like, strike readily at this season, if dibbled into boxes of light soil and stood in any close, warm house. *Heliotropes* transplant badly, and should, when struck, be potted up simply into small pots, and from these they may be eventually turned out into the beds without much risk of a check. Where *Alternantheras* are used for supplying a groundwork for carpet or other bedding arrangements, frames on hot-beds afford the readiest means of increase, where cuttings may be shifted in thickly; and when struck they can be hardened off in the hot-beds, and then transplanted to the beds early in June. Seedling *Hollyhocks*, now standing in 60-sized pots, may, if well-rooted, be shifted into large 4's, in which they will make strong plants for turning out into the borders in a few weeks' time. Subtropical bedders must not be allowed to become pot-bound and stunted, but be shifted and kept in an active growing state.

All arrears of work in the pleasure-grounds should be pushed on as fast as weather and circumstances permit; the unfavourable character of the season has for some time hindered all outdoor work. The re-laying of Box edgings should be brought to a close. The cutting the turf verges of walks with the edging-iron should be done where the edges are irregular. The proper width of walks whose edges are pruned away in this manner is restored by cutting a strip of the turf on each side 1 foot wide, and pushing it towards the walk, and making it firm, the interval between the removed and the unremoved turf being made good with fresh turf. The tidiness of the lawn should be maintained by mowing and sweeping as often as becomes necessary.

PLANTS UNDER GLASS.

By G. H. MARCOCK, Gardener, Luton Hoop Park, Luton.

Winter-governing Carnations.—The young plants will probably stand in need of a shift into larger pots, and before a beginning is made in the potting, they should be cleansed from green-fly and red-spider. If the plants are to flower in 5-inch pots, the potting-compost should be the same as that I have previously given, with the addition of a small quantity of fresh soot, which should be well incorporated with other ingredients. Let the plants be but little disturbed in turning them out of their pots, and pot them with a moderate degree of firmness—not, however, using a hammer; and leave ample space for affording water. The repotted plants may be placed in a span pit or frame near to the roof-glass, affording a temperature of about 55° by night, 65° or more by day, with ample ventilation after the first week, lightly dewing them over with the syringe in warm, sunny weather. These plants will require to have the points pinched out twice or oftener during the early part of the growing-season. Plants of Carnations which are of 1896 and 1895, should be examined, the healthiest

being selected to be slightly reduced in the size of the balls, and potted in 7 and 8-inch pots. The flowers from these older plants will not be so large as those furnished by the plants of the present year's striking; but for supplying flowers in the mouths of November and December, they will be much more valuable. At this season these plants should be kept in a greenhouse or cold-frame, and somewhat warm and close for the first fortnight after re-potting.

Souvenir de la Malmaison Carnations.—Any plants which may be showing their flower-spikes should be kept quite free from green-fly, and a little drier at the roots, it being advisable to rather err in that direction than to keep the soil wet. Let staking and tying receive proper attention, and tie loosely, in order that the ties may be readily moved up the stake with the advancing growth of the spikes. When affording stakes, use no more than are actually needed, and in all cases let these be as thin as is consistent with the purpose they are meant for; and I would suggest the use of the lateral growths of bamboo canes, these being thin, light, and durable.

Plumbago rosea.—Cuttings may now be taken from old plants that were pruned hard back after flowering. After preparing them, place four round the sides of a 3-inch pot, and plunge in a bed in the propagating-pit, keeping them moist and shaded, and in about three weeks the cuttings will be ready to pot singly in 60's. When the roots reach the sides of the pots, shift into pots one size larger, the following shift being into 32's, in which they may be allowed to flower. A good mixture for the last repotting consists of three-quarters good fibry loam, one quarter leaf-mould, and a good proportion of sand. In the early stages of growth, *Plumbago rosea* requires stove temperature, but in summer a frame in a sunny spot is more suitable. The plant should be stopped when in the first pot, and once again after it is established in the flowering-pot. For brightening the stove during the winter months, and for general effect it is a really excellent plant, and being graceful in habit it affords a pleasing contrast with others.

Cleodendron fallax.—Seeds of this plant should now be sown in seed-pans, and in a mixture of leaf-mould and sharp sand, sowing evenly over the surface and covering lightly. When the seedlings can be readily handled prick them off in very small pots and keep them in heat, and when established and rooting freely shift them into 5-inch pots, using a compost of peat half, loam quarter, and plenty of sharp sand. During the summer this species may be kept in the intermediate-house, in a position near the glass, and where they can be reached with the syringe, red-spider being very liable to injure them if the surroundings are dry, and these mites soon disfigure the foliage. Plants so treated flower when about one foot high.

THE HARDY FRUIT GARDEN.

By H. W. WARD, Rayleigh, Essex.

Fruit-tree Stocks.—Remove all growths that push below the grafts upon fruit-tree stocks as soon as they appear, so as the sooner to effect a complete union of stock and scion. Should the clay have fallen from any grafts which are not yet sufficiently united to the stocks to enable them to bear exposure to light and air without injury, it should be replaced by clay which has been worked to the consistency of putty, making it full in the centre, and tapering off to the wood a little above and below the point where the scion is placed. In the case of fruit-tree stocks, as well as engrafted stocks, growing in light, shallow soil, it will be advisable to give them a good watering at the roots, and apply a coating of short manure or leaf-mould (where the latter is plentiful) between the rows to the depth of 2 or 3 inches.

Raspberries and Strawberries growing in light or shallow ground may be considerably benefited by watering them at the roots at short intervals during dry weather. It is absolutely necessary to keep the soil uniformly moist about the roots of all kinds of fruit trees and plants during the period of active growth, if remunerative crops are to be secured. The beds, too, must be kept free from weeds.

Miscellaneous Work.—This will consist in the thinning-out and pinching of young growth, tying in and securing young shoots in position by means of nails and shreds, keeping the same free from the attacks of aphid, &c. Run the Dutch-bee between lines of Gooseberry and Currant cuttings, as much with a view to aerate the soil as destroying seedling weeds. If not already done, bush-harrow and roll grass in orchards which had been top-dressed some

time ago, and in which the space allowed between the trees will admit of the work being done without injury to the stems of the trees.

THE ORCHID HOUSES.

By W. H. WURZ, Orchid Grower, Barford, Dorking.

Paristérias.—The Dove Orchid, *P. elata*, *P. Lindeni*, *P. pendula*, and *P. aspera*, are plants which require a long rest in the winter, and plants of these species will at this date be pushing up growths from the base of the pseudo-bulbs, and in need therefore of some new material about the roots. Healthy plants, and those which have sufficient space for growth, need not be disturbed, but have the worn-out materials picked out, and fresh substituted for them. The plants that are in need of more rooting space should be turned out of their pots and placed in others large enough to allow for two or three seasons' growth. Cocks should occupy the pots to one-half their depth, and the compost be made up with two-thirds hard turfy loam, one-third fibrous peat, with the addition of some dried cow-dung or Oak-leaf soil. The soil must be filled in firmly around the roots, and up to within a space of 1 inch below the rim of the pot. When the new roots are noticed at the base of the young growths, let the surface of the soil be covered with living sphagnum-moss. After repotting the plants, they will not require much root moisture; but plants in vigorous growth should be liberally supplied with water, and as soon as the new pseudo-bulbs begin to form, alternate applications of weak liquid manure will benefit the plants. *Paristérias* are at home in warm, moist stoves, or the East Indian-house, and during the earlier stages of growth they require to be shaded from sunshine; but as the pseudo-bulbs approach maturity, gradual exposure to full sunshine should take place.

Anguloas.—The species *A. Clowesii*, *A. eburnea*, *A. unicolor*, and *A. Kuckeri*, now sending up their flower-spikes and young growths, should be stood on the shady side of the house, and afforded water in sufficient quantity to moisten the compost. It is not advisable to disturb these species by repotting them before the flower-spikes are cut, at which time roots emerge from the new growths. Avoid letting water lodge in the centre of the breaks, these being very liable to damp off in consequence.

Calceyia cristata and its varieties *maxima*, "Chatsworth," *Sanderi*, *Lemoniana*, and the pure white variety *hololeuca*, are valued decorative plants, and useful for supplying flowers during the winter. Any specimens which have reached an inconveniently large size may now be divided and re-potted. If plants of moderate size are to be grown into large specimens the present is the best time to repot them. Such plants ought not to be disturbed at the roots, or considerable time will elapse before they are brought to their former condition. Being plants of easy culture, it matters little whether they are grown in pots, pans, or baskets, but whichever is selected should be well drained. As a potting mixture, rough, turfy loam and fibrous peat in equal parts, with an addition of sphagnum-moss and a few thick pieces of crocks to assist drainage, may be employed. Place the plants in the coolest part of the Cattleya-house, or where an intermediate temperature is maintained. Generally, after disturbance of the roots, the pseudo-bulbs shrivel slightly, still it is not good practice to deluge the plants with water to preserve their plumpness, because an over-abundance of water at this period might cause the older roots to decay, and the pseudo-bulbs to shrivel still more. Rather give them an occasional overhead syringing, and keep the atmosphere around them moist; and till some degree of progress is made, shade them from sunshine. Established plants require abundance of water till such time as the new pseudo-bulbs are fully made up. Other species which grow well in an intermediate-temperature, as *Calceyia conferta*, *C. elata*, *C. Rossiana*, *C. corrugata*, *C. barbata*, *C. speciosa*, *C. ocellata*, *C. graminifolia*, *C. Thuuiana*, *C. odoratissima*, and *C. corymbosa*, which are now making new growth, may be repotted. *C. flanda* produces pendulous racemes, and is best cultivated for it. The warmest loviners, *Masangana* and *C. tomentosa* should also be grown in baskets, suspending them, while growing to the roof, on the shady side of the East Indian-house, and when at rest, hanging them in the intermediate-house. *C. Dayana* and *C. ochracea*, now showing their flower-spikes, will require more water at the root. The rare *C. Sanderiana*, a plant that is at rest in the spring, should be placed in a light

position in the cool-house, and kept rather dry at the root, till the flower-spikes appear, when the plant should be steeped in tepid rain-water, and returned to its former position in the Cattleya-house. *C. asperata* Lowi requires stove treatment; it is also beginning to grow, but should not be repotted till the flowers have faded. All of the species named root freely in ordinary Orchid compost. *C. fulgens* is a distinct-growing species, its habit of growth being erect. To meet its requirements in this respect, the plant may be fastened to upright Teak-rafts, the rods of which are about an inch apart. Insert the lower part of the raft into a pot, fixing it with crocks, over which place some peat, and prick in heads of sphagnum-moss thickly over the surface, as the plant delights in aerial moisture.

FRUITS UNDER GLASS.

By F. HARRIS, Gardener, Eastnor Castle, Leicestershire.

The Early Fig-house.—If the first crop of fruit has been gathered from the trees, syringing may be recommended, and a copious application of water should be given to the roots, in order that the second crop of fruits may experience no check. Remove all weak growths, and in the case of trees planted in the border, and trained on trellises, the shoots may be tied down a little, but do not tie them severely. If the points do not touch the glass, let them turn up toward the sun, as this strengthens and ripens them for the production of next year's fruit. Figs trees usually produce a large number of fruits for the second crop, and any thinning that is done will tend to increase the size of the fruits that are left. On trees where the fruit is ripening, syringing should be withheld and a drier atmosphere maintained still. The fruits should be left upon the trees till thoroughly ripe, or the flavour will be deficient. Figs require careful packing, but given this, they will travel very well. We pack hundreds annually, and adopt the following system:—As the fruits are gathered perfectly ripe, they are placed carefully in shallow trays lined with wadding and tissue-paper, taking care that the fruits do not touch each other. When nicely cooled, we wrap them first in soft Vine leaves, then in white tissue-paper, and pack firmly in a single layer, either in a well-beaten moss, which we always use here, or in fine wood-wool.

Succession-houses.—Trees upon which the fruit is starting to swell the second time will need liberal supplies of water, and if they are carrying good crops, liquid manure should be given. Syringing them frequently until the fruits commence to ripen, and if it is desired to hurry the fruits a little, this may be done by closing the plants early, with plenty of sun-heat, and a corresponding degree of moisture.

Late-houses.—Those started at the date suggested in a previous Calendar will now have developed their fruits sufficiently to admit of them being thinned, and it should be done as soon as possible. Many gardeners do not thin their Figs, but we find it advantageous to thin the fruits to three, two, or one upon a shoot, according to the distribution of the crop and the size of fruits required.

Melons.—Upon very early plants the fruits will now be swelling fast, and plenty of food and moisture at the roots, especially if the plants be in pots, should be afforded. Weak liquid-manure may be given alternately with clear water, taking care that it is not greatly below the temperature of the atmosphere of the pit or house. Where canker is apprehended, care must be taken not to wet the stems when watering; and should the slightest sign of it appear, it may be checked if dusted at once with a little fine quicklime. As the fruits show signs of ripening, water must be given more sparingly, or cracking of the fruit will be the result, especially of such thin-skinned but foely-flavoured varieties as *Victory of Bath* and *Eastnor Castle*. Keep all lateral growths closely pinched at this stage, so that the strength of the plant be not wasted. Plants upon which the fruits have just set should be relieved of all those beyond the number it is intended they should carry. If medium-sized fruits are desired, each plant may carry four. We generally plant ours close together, run them up on a single stem, and let each plant carry two. This is a simple system, and generally two fruits will swell together while sometimes it is difficult to get four or six to do so. Keep all side-growths pinched out of succession plants till they reach the trellis, then leave one growth to each wire. Sow a few seeds occasionally, to keep up the supply.

EDITORIAL NOTICES.

ADVERTISEMENTS should be sent to the PUBLISHER.

Local News.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

Newspapers.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

APPOINTMENTS FOR THE ENSUING WEEK.

SATURDAY,	APRIL 24	Royal Botanic Society, Meeting.
TUESDAY,	APRIL 27	Royal Horticultural Society's Committees; Lecture on "Winter and Spring Bedding."
FRIDAY,	APRIL 30	Annual Dinner of the Royal Gardeners' Orphan Fund at Hotel Cecil.

SALES.

MONDAY,	APRIL 26	Important Sale of Begonias, Carnations, Dahlias, &c., at Protheroe & Morris' Rooms.
TUE.-DAY,	APRIL 27	Imported and Established Orchids, at Protheroe & Morris' Rooms.
WEDNESDAY,	APRIL 28	Japanese Lilies, Carnations, Gladioli, Begonias, &c., at Protheroe & Morris' Rooms. Palms and Ornamental Plants from English and Foreign Growers, Border Plants, Bulbs, Lilies, Roses, Shrubs, &c., at Stevens' Rooms.
THURSDAY,	APRIL 29	Special Sale of Orchids in Flower and Bud, Importations of Orchids, &c., at Stevens' Rooms.
FRIDAY,	APRIL 30	Imported and Established Orchids, at Protheroe & Morris' Rooms.

AVERAGE TEMPERATURE for the ensuing week, deduced from Observations of Forty-three years, at Chiswick.—50.1°.

ACTUAL TEMPERATURES—

LONDON.—April: Max., 55°; Min., 46°.

PROVINGES.—April 21 (6 P.M.): Max., 57°, Valentinia; Min., 42°, Aberdeen.

Of late years much stress has been laid on the difference between the vegetative and the sexual conditions of a plant, which are even asserted to constitute distinct "generations." Very often the plant, in its sexual or reproductive state, does differ very greatly in appearance from the plant in its vegetative or neutral stage. Nevertheless, quite as great differences occur sometimes in the different phases through which the plant in its purely vegetative state passes, as witness the illustration, fig. 92, showing the primordial scattered leaves of *Pinus Parryana*, as well as the adult foliage on short spurs. The *Retinosporas* afford similar illustrations; and we know that that particular phase of vegetation can be perpetuated by cuttings, and remain in the same condition for an indefinite time. One of the most striking illustrations of alternation is afforded in the reproduction of Ferns. The spores do not immediately reproduce the plant, but they fall off, as many buds do, and, under propitious circumstances, they develop a flat, green plate (the prothallus), on which are formed the "antheridia" and the "archegonia," bodies corresponding respectively to the anthers and to the ovaries of flowering plants. It is customary to consider the frond of a Fern, with its spores, as belonging to one generation; the prothallus, with its two kinds of sexual organs, as representing another generation—the frond being called the "sporophore," the prothallus the "oophore." Without either the existence of the plant would be incomplete; but of the two, the vegetative or sporophore phase is obviously the more essential.



FIG. 92.—*PINUS PARRYANA*.

Showing scattered primordial leaves and tufted permanent leaves.



FIG. 93.—*FURCRAEA MACROPHYLLA*. (SEE P. 273.)

(Showing small bulbs intermixed with ripe capsules.)



FIG. 94.—*SOLANDRA GRANDIFLORA*: FLOWERS CREAMY-WHITE. (SEE P. 273.)



Now, what is there in this arrangement to suggest anything more than a different phase of growth, a stage in the progressive sequence of events from birth to death? Nothing externally, as far as we can see, but the fact that the oophore sometimes, but by no means always, becomes detached from the sporophore and leads an independent life. The oophore or prothallus corresponds roughly to the "inflorescence" of flowering plants in that it bears the flowers or their representatives. The inflorescence does not usually separate itself from the parent axis or sporophore, although sometimes it does so, as in the case of the male catkins of dioecious or monoecious plants, Willows, Hazels, &c. Again, in the flowers the microspores or pollen-grains are detached from the parent plant as freely as either the spores or the atherozoids of a Fern can be. The megasporangium (ovule) and "megasporophore" (embryo sac) do not separate themselves from the parent stock. Hence, if detachment be considered the sign of an alternation of generations, we have the anomaly that the male part of the plant constitutes a generation, whilst the female part does not. The fertilised embryo is in any case a new individual.

In connection with this so-called alternation of generations the phenomena of budding have to be considered. Vegetative buds may occur on almost any part of the plant. They are very common in Ferns, and some of the phenomena recorded under the head of Apogamy, where a bud is formed on the prothallus, and Apospory, where the prothallus is formed without the mediation of a spore, seem to be referable simply to the production of buds, or parts homologous to buds. Dr. STANSFIELD even records the co-existence of the neutral, of the aposporic, and of the apogamic conditions, a fringe of prothalli being formed on the fronds, and the prothalli budding out into fronds; and on p. 276, Mr. DRURY records a Fern which shows on the same frond both the aposporous and the apogamic condition. Mr. LANG has also noted the presence of sporangia or spore-cases on the prothallus of a Scolopendrium. To which generation, we ask, can an organ be assigned which bears at one time nothing, at another sexual organs, at another buds, and at another spore-cases?

The production of buds in place of flowers is strongly exemplified in the case of *Furcraea*, where the "inflorescence" usually produces hundreds of bulblets and no flowers. We suppose no one would consider these separable buds as constituting a distinct generation. Since beginning this article, specimens gathered by Dr. MORRIS have reached us through Mr. WATSON, which bear ripe seed-vessels and buds on one and the same inflorescence (fig. 93). It is hard to conceive of a difference of "generation" in this case.

The question to be decided is, whether the observed phenomena are to be taken as indicative of new and distinct "generations," or of different stages of growth of the same generation.

The point is one of much importance, because some go so far as to deny any homology between the organs belonging to the one generation, and those pertaining to the other; and students are warned against applying inferences drawn from the one to the other set of organs. The reader will find these subjects clearly treated by Mr. DRURY in his paper on "Fern-generation" published in the last number of the *Journal of the Royal Horticultural Society*.

A remarkable difference has, it must be added, been pointed out in the nuclei of the vegetative and of the reproductive cells respectively. The nucleus of the cell, as is now known, breaks up into a number of separate elements, called "chromosomes;" and the number of these chromosomes in the reproductive cells is only half as large as that in the vegetative cells; so that, from this point of view, the distinction between the two generations is well marked in the Gymnosperms as well as in many of the Cryptogams. In the thallus of the Liverworts, which corresponds to the prothallus of Ferns, Professor FARMER has ascertained that the nuclei show a reduction in the number of chromosomes, two chromosomes being, as it is believed, fused into one. Thus, the two generations of "sporophyte" and "gametophyte" are, it would seem, really characterised by a difference in their nuclear constitution. The developments and consequences of these phenomena are very complicated and very far reaching. Even the cause of the formation of "sports" may possibly be traceable to nuclear changes of the kind mentioned. There is obviously need of much further investigation; but the number of investigators in a subject demanding so much minute research and patient skill must necessarily be few, and the time involved in obtaining results must be long.

The whole subject has lately been ably discussed by Sir EDWARD FRY, in a recent contribution to *Nature*, to which we would draw the attention of our readers.

SOLANDRA GRANDIFLORA.—This fine climbing plant, now rarely seen in gardens, is indigenous to Jamaica, where it goes under the name of the Peach-blossomed Trumpet-flower. Under cultivation the flower is white, with a purple tinge on the interior of the tube, but under the intense light of the tropics it is of a pale flesh colour. It first flowered in this country at the Royal Gardens, Kew, in 1818, the figure given in the *Bot. Mag.* of that year having been taken from a flower furnished by Mr. ALTON. It also flowered in Mr. Salsbury's garden at Mill Hill, at about that time, and produced fruits there. The genus was named in honour of Dr. Solander, a pupil of Linnæus, and fellow traveller of Sir Joseph Banks in his voyage to the South Seas. Cuttings of ripe wood strike readily in heat; and the cultivation of the plant is not difficult, provided a well-drained fairly roomy border, and plenty of head-room are given it in the stove. We are indebted to Mr. G. BOLAS, gardener at Hopton Hall, Derbyshire, for the flower from which our engraving (fig. 94) is taken, and the following particulars:—"The plant is of interest from the time the buds begin to expand. The change in the colour of the flower is very remarkable, these turning from a pale olive green tinted with yellow, to a creamy white on the fourth day. I received the plant in the summer of 1896, looking like a dried stick, with no signs of life in it, it having travelled, wrapped in a newspaper, from the Island of Madeira. The plant had been stuck into the ground some days in a garden near Shrewsbury before I got it, and this gave me a hint as to the kind of treatment necessary to flower it."

ROYAL HORTICULTURAL SOCIETY.—The next fruit and floral meeting of the Royal Horticultural Society will be held on Tuesday, April 27, in the Drill Hall, James Street, Victoria Street, Westminster, from 1 to 5 P.M. A lecture on "Winter and Spring Bedding" will be given by Mr. A. DEAN, at 3 o'clock.

"THE JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY."—The lately-issued number contains Mr. DRURY'S valuable paper on "Fern Generation;" Mr. JARNOCH'S article on forcing Lilies of the Valley, wherein he tells us there are many thousand acres on the Continent and

in England devoted solely to the production of Lily of the Valley crowns. Mr. BRILL follows with papers on the Cladonia and on Hardy Summer Flowers. Mr. LEES discourses on the Chrysanthemum. Some valuable facts are brought to light in Mr. ROBERT FIFE'S paper on Seed-growing.

HORTICULTURAL CLUB.—The monthly dinner and conversation of the club took place on Tuesday evening, 18th inst., when there was a good attendance of members and friends. Mr. HARRY J. VERRIN, Vice-chairman of the club, presided; and there were present Messrs. H. J. Pearson, Francis T. Rivers, H. Rivers, J. A. Cockett, J. Cockett, jun., H. Selfe-Leonard, James Walker, George Paul, C. E. Shea, J. Asbee, Dr. Ernest D'Ombraïn, H. A. A. D'Ombraïn, Philip Crowley, and the Secretary. A very interesting paper on "The Flower Gardens of Victoria," was read by Dr. Ernest D'Ombraïn, of Melbourne, in which he showed how erroneous were the opinions often entertained in this country as to the soil and climate of Victoria; he also gave an account of plants and flowers which best flourished in the colony. An interesting discussion followed the reading of the paper, and many questions were asked on some of the points elicited by the lecturer, to whom, on the motion of Mr. Veitch, a cordial vote of thanks was given. Thanks were also given to Mr. George Mount for some Canterbury Roses which he sent to decorate the table.

NEW YORK BOTANICAL GARDEN.—A second *Bulletin* of the New York Botanical Garden gives, says the *Botanical Gazette*, additional information as to plans. The many problems that have presented themselves for solution are discussed. The museum building, with a frontage of 304 feet, with two equal lateral wings, whose total completed length will be about 200 feet, will give ample space for collections and laboratories. The allotment of the grounds is of interest: buildings, with decorative approaches and surroundings, about 25 acres; Pines and other coniferous trees (90 to 100 species), 30 acres; deciduous trees (about 275 species), 70 acres; natural forest, mostly undisturbed, 65 acres; shrubs and small trees, 15 acres; herbaceous grounds for scientific arrangement, 8 acres; bog garden, 5 acres; lakes and ponds (exclusive of the Bronx), 6 acres; meadows, 10 acres; besides various provisions for aquatics, Vines, rockeries, &c. The *Bulletin* also contains Dr. BRITTON'S address on "Botanical Gardens."

RADIOGRAPHY AND BOTANY.—Dr. HENRI VAN HEURCK, Director of the Antwerp Botanic Garden, has taken a series of fine photographs of flowers and fruits, especially of the flower of *Pavonia Makoyana*, the fruits of *Pisum sativum*, *Tamarindus indica* (the position of the embryo is shown remarkably clearly), *Papaver somniferum* (the walls and seeds being very distinct). Those interested in radiography (X-rays) may like to hear of a work which Dr. VAN HEURCK has written and illustrated with fine plates, entitled "Rayons X." It is the history of what has so far been done in connection with Dr. ROYEN'S discovery. *Ch. De B.* [The first illustrations of the application of the X-rays to botanical purposes was given in the *Gardener's Chronicle*, Oct. 24, 1896, p. 491. Ed.]

A NEW USE FOR CYCAS REVOLUTA.—How ever interesting the Cycadæe may be from a botanical or palæontological point of view, they are not generally regarded as an important economic group; the only value, indeed, hitherto attributed to them has been for the sake of the starch which is found in the seeds of some and in the stems of others. *Cycas circinalis*, for instance, furnishes in India a quantity of starch, commonly known as sago, and used as food. From the stems of the Australian *Macrozamia* and the West Indian *Zamia*, starch is also obtained in abundance, as also from the plant to which we desire to draw attention, namely, *Cycas revoluta*, a Japanese species, where it is largely used as an article of food. The most recent development of this plant, however, from an economic point of view, is the utilisation of the fronds for plaiting into baskets and flower-pot covers. It would seem,

judging from the quantities of these articles now seen in shop windows, that this manufacture must be a large one in Japan, considering that waste-paper baskets made from these elegant fronds can now be bought for a few pence each; and the fronds themselves, simply dried, are also sold at about 2s. each for decorative purposes. The adaptive resources of the Japanese are truly wonderful. The old name of Sago-Palms, under which the plants were at one time known, is given to the baskets and fronds now on sale in this country.

CINERARIA BOULE DE NEIGE.—Messrs. LETELLIER ET FILS, of Caen, recently sent for our inspection a plant of a pure white *Cineraria* of good habit. The flowers were of moderate size and good substance; both rays and disc white. The plant was intended to have been exhibited at the Royal Horticultural Society, but it was too travel-stained to justify its appearance before the critics. It will probably be useful as a decorative or market plant.

BOTANICAL EXPLORATIONS SIXTY YEARS AGO.—How much now well-known ground was, sixty years ago *terra incognita*, needs no telling here, but it is interesting to learn that in 1836, HARTWEG, the traveller for the Horticultural Society of London, first started for Mexico, Guatemala, and tropical America in general. There is an interesting account of this explorer's travels in *Erythica* for March, wherein our readers who know not, or who have forgotten the details, will learn how many plants with which they are now familiar owe their introduction into America and England to this hardy and intrepid pioneer. The account is to be continued in the April number of *Erythica*—a magazine in which, by-the-by, various other interesting articles and paragraphs are always to be looked for.

TASMANIAN APPLES.—The officials of the P. & O. Co. inform us that they have had telegraphic notice from Melbourne of the following shipments of fruits, &c., viz., per Orient Co.'s ss. *Austral*, 24,000 boxes; per P. & O. Co.'s *Paramatta*, 25,000 boxes of Apples—due in this country about May 19.

PRIZES AT THE HAMBURG EXHIBITION.—This exhibition, which promises to be the most important horticultural event of the year, has, as is well known, received great support from the Emperor and many of the German Princes and Governments, and a number of citizens of Hamburg have instituted numerous honorary prizes, so that the more important exhibitors will receive, besides medals, more than 100,000 marks in money. Further, the Senate and the Municipality of Hamburg propose to offer 50,000 marks to the committees in honorary prizes and State Medals, a proposition that is sure to be approved and accepted. In view of the high value of the prizes, the desire to compete on the part of natives and foreigners has become so great, that fears are entertained that all of the entries cannot be accepted from mere lack of accommodation.

A CRYSTAL PALACE VICTORIAN ERA FLOWER SHOW is to be held on Wednesday and Thursday, June 23 and 24. The schedule we have just received describes the forthcoming show as "an exhibition of the more prominent plants and flowers introduced to this country since HER MAJESTY'S accession to the throne in 1837." There are only twenty-five classes, but some of these will occupy a considerable amount of space, and at the same time introduce features of some novelty into a present-day English flower-show. Class 8, for instance, is for a group of Conifers arranged in a space not exceeding 500 square feet, for which a 1st prize of £20 is offered. A group of Palms, to be arranged upon a similar space by nurserymen, should also make an unusual display. Classes for Begonias, Caladiums, Cannas, Codieums, Ferns, Fine-foliage plants, Gloxinias, Hardy Alpine plants and Herbaceous plants, Orchids, Pelargoniums, Roses, and the inevitable group of Miscellaneous plants arranged for effect, have been provided, and the collections required of many of these are large. Finally, there is to be a miscellaneous group of plants introduced during HER MAJESTY'S reign, arranged in a semicircular space not exceeding 500

square feet. As the exhibition is to be opened upon the day succeeding the general commemorative festivities, it is likely to obtain a very large number of spectators.

FRUIT PRESERVATION.—An interesting experiment in the preservation of fruit by means of cold storage has been carried out during the past season by the Technical Education Committee of the Kent County Council at Dartford. The experiment has been personally superintended by two members of the committee, Messrs. HESKETH and CHAMBERS, whose reports are now issued. They state that the stores were kept at steady temperatures of 30° and 40° until near the end of the year, when it was considered there would be no further utility in prolonging the experiment under the same conditions. Mr. HESKETH'S report thus proceeds:—The fruit loses weight somewhat during the refrigerating process, as is evident by the amount of moisture collected off the brine walls, which amounts to 1.5 per cent. of the weight of the fruit per week. This moisture is absorbed from the fruits by the air during its natural circulation in the chamber, and deposited on the colder surface of the brine walls from which it is drained away. The air is thus kept in a dry condition. An object in future experiments will be to reduce this desiccation of the fruit, but still maintain the dry condition of the air, which is so essential in avoiding mildew. It is, of course, a matter of common knowledge that fruit, especially of the harder kinds, can be kept back for a time from ripening by means of refrigeration, such knowledge being taken advantage of for bringing fruit from Australia and the Cape to England; but one main object in this experiment was to show the cost of fruit preservation on a small scale, such as our fruit-growers might find of service. A careful log has, therefore, been kept of the working expenses, and this shows that the total cost of engine-power (gas at 3s. 6d. per 1000 cubic feet being used in a gas-engine) and all stores amounted to 8s. 9d. per day. This does not include anything for labour, as only the occasional attention of a labourer otherwise employed is required. The cost of working by an oil-engine would be approximately the same. As mentioned in the first report, the refrigerating machine, which is the smallest size practicable, was capable of dealing with a much larger chamber, its average hours of working per day being only three-and-a-half. If an average of twelve hours a day for the working of the machine is taken, it could then maintain a store 24 feet by 24 feet by 8 feet high, which would be capable of storing some 2000 bushels of Apples. The cost of working the machine on such a chamber, based on the experience gained in the recent experiment, would be 2s. 2d. per day. Of course, larger installations, worked with larger machines, would cost much less to work in proportion to the quantity of fruit kept. It is proposed to make experiments during the coming summer on the soft fruits as they come in season. In that portion of the experimental work managed by Mr. CHAMBERS, four-and-a-half bushels of fruit were stored in the chambers for 101 days, and 353 bushels for fifty-six days. Mr. CHAMBERS states that some of the summer Apples left in the store until the close of the experiment were found to be sound, but were not so good in flavour, and were somewhat soft. On the other hand, the winter Apples were of as good flavour as when put in, and were quite as hard and sound. *Times*.

THE NATIONAL CHRYSANTHEMUM SOCIETY'S annual report is a proof of the continued popularity of the flower, and of the remarkable vitality the Society possesses. Those who saw the wonderful display of plants and blooms on the occasion of the Jubilee show in November last year, will have some idea of the amount of work such an exhibition entailed upon the Society's committees and executive officers. This was done in a satisfactory manner, and from the report we learn that during the year there has been added to the reserve fund the sum of £55, making a total of £104 18s. 2d. The papers read at

the Jubilee Conference by Mr. GEORGE GORDON, Mr. C. E. SHEA, and Mr. NORMAN DAVIS are included in the information bound up with the report, such as the list of members, schedules of prizes, &c. The number of members continues to increase, as does also that of affiliated societies in Britain and abroad. The policy of the Special Classification Committee in regard to the classification of "certain varieties of doubtful character announced as incurred" is, perhaps, the most expedient one. It is best to take a broad view of the question, and in cases where there is doubt catalogue the variety as an incurred, leaving it to the judges to decide which are inferior at the exhibition. It is, however, beyond dispute, that in the attempt to obtain increased size and variety among the true incurred section, there have been raised a number of varieties that are, properly speaking, Japanese incurred, and are the result of crosses between the true incurred type and the Japanese. The report of this committee explains fully the procedure that was followed, and the number of votes all these "doubtful" varieties obtained. During the present year there will be held four exhibitions—the first early in September, which is seldom creditable to the Society; the second, on October 12, 13, and 14; the third, November 9, 10, and 11; and the final on December 7, 8, and 9.

THE ELECTRIC LIGHT FOR FORCING HOUSES.—In a recently-published work Prof. BAILEY asks, "Can the electric light stand for sunlight? Can it be profitably used at night and in dull weather to hasten the growth of plants?" The questions have received greater attention in the United States than elsewhere in the world. Experiments have been made at the Cornell Experiment Station, the West Virginia Station,† and by W. W. RAWSON, an extensive vegetable grower at Boston. It is found that the electric light, both the arc and the incandescent, can be advantageously used upon Lettuce to piece out the sunlight in mid-winter. In various florists' plants it also produces earlier bloom. It is usually injurious, or has only negative results, upon Radishes, Peas, Carrots, Beets, Spinach, and Cauliflowers. Upon Lettuce the value of the electric light in hastening maturity is emphatic. Mr. RAWSON saves about a week upon each of his three winter crops by the use of three ordinary street lamps hung over a house 370 feet long by 35 feet wide. At Cornell the results upon Lettuce have been marked in many tests, and the gains in maturity have been as much as two weeks. It is found in every instance that the naked arc light—that is, a light without a globe—hung inside the house, injures the plants that are within a few feet of it, and tends to make all plants within reach of its rays run too quickly to seed. The use of a clear glass globe, however, overcomes all injury. The best results are to be obtained by placing the light—either naked or surrounded by a clear globe—a few feet above the roof. An ordinary 2,000 candle-power arc-light—such as is commonly used for street lighting—will exert a marked effect upon Lettuce for a radius of 75 to 100 feet, if the roof is clean and the framework of the house is light. The light may be allowed to burn all night. Incandescent lamps have the same influence as arc lights, but to a less degree. It will be found profitable to use the electric light for plant-growing, if at all, only in the three or four months of mid-winter.

DR. PAUL TAUBERT has died of yellow fever during his exploration of the little-known territory Amazonas, in Manos. His death occurred on New Year's Day last.

THE ROYAL GARDENERS' ORPHAN FUND.—We have the pleasure to announce that Mr. LEONARD SUTTON (SUTTON & SONS) has sent a donation of £100 to the Royal Gardeners' Orphan Fund; whilst his

* BAILEY, *Bulletin* 30 (August, 1891), 42 (Sept., 1892), 55 (July, 1895); also, "Electricity and Plant-growing," in *Trans. Mass. Hort. Soc.*, 1894. † Experiments with Electric Currents upon Plants," by CLARENCE D. WALKER, will be found in *Bull. U.S. Geol. Surv.* 16 (1892) and 25 (1893) of the Mass. Hatch Experiment Station. *The Forcing Book*, by L. H. BAILEY, p. 80.

† RASE, "Electro-Horticulture with the Incandescent Lamp," *Bulletin* 37 (July, 1894).

brother, Mr. A. W. SUTTON, has sent a similar amount to the Gardeners' Royal Benevolent. We are requested to remind our readers that the annual festival dinner of the Orphan Fund will take place on the 30th inst., at the Hotel Cecil, on the Thames Embankment, Charing Cross. Gentlemen desirous of attending the dinner will please communicate with the secretary, Mr. A. F. BARON, Chiswick, or at the Hotel. Donations are still most thankfully received, and will be duly acknowledged.

FRUIT FROM THE CAPE.—Since our last report the "fruit ships" have arrived from the Cape; the first, the *Scot*, bringing 55 boxes of Pears and 294 boxes of white Grapes; the second, the *Aventale*, bringing in 559 boxes of white Grapes. We are informed that, with the exception of 30 boxes, these consignments turned out in good condition, and realised fair prices. The faulty boxes above noted were very over-ripe, and hardly saleable.

PANSIES.—We have received from Messrs. DOBBIE & Co., of Rothsay, some charming varieties of Pansies, especially noticeable being some of the new Victoria strain, which are of a brilliant rich reddish-brown hue, almost scarlet when seen under bright sunshine—a great acquisition. It has very dark brown velvety patches on the sides of the petals. A. J. Rowberry is a pure yellow self, of large size; Bullion is another yellow, with a few faint streaks of brown around the centre—it is a greatly-prized variety; Butterfly, a large flower with a broad purplish-blue margin, and white central area, streaked with purple; Princess Ida, pale blue, and said to be very early; Marchioness, or Niphetos, is a white self; Cecilia, pale blue with a white centre; Mrs. C. F. Gordon, large, and of two shades of purple and blue; and Colleen Bawn, creamy-white, a large flower. All of the varieties set very nearly approach the florist's perfection of form and colouring.

BELGIAN NOTES.—At the meeting on April 11 of the Brussels Orchidicène, one of the chief features was the display of Odontoglossums, including varieties of *O. crispum*, *Pescatorei*, *scoptrum*, *luteo-purpureum*, *Wilkeanum*, *triumphans*, *Ruckerianum*, and *cirrosum*. With the latter variety an entire table was covered by Messrs. LUCIEN LINDEN & CIE. These exhibitors also sent *Odontoglossum* × *Adrianae*, the flower pale green, deeper at the edge, spotted with reddish-brown, lip white, in form like that of *luteo-purpureum*, the edge fringed and dotted with red. *O. crispum* from the same exhibitors had almost round petals, of a beautiful white colour, sepals flushed with violet, lip with four or five bright brick-red spots; the form of *Pacho*. Dr. CAPART sent *O. Ruckerianum*, a very large flower, white, tinged with rose. MM. DALE-MAGNE & CIE. sent *O. Wilkeanum*, with a large and fine yellow flower. M. F. PAUWELS exhibited *Lycaste* species, with chestnut-brown sepals, widely edged with dull green, petals and lip white, with numerous spots close together in triangular form, dark rose; all the divisions are gracefully bent back. MM. LINDEN showed *Cattleya Trisnei*, petals very wide, lip beautiful; MM. LUCIEN LINDEN staged *Trichopilia suavis*; MM. LINDEN, *Miltonia vexillaria* var. *Boussiesiana*, a beautiful dark purple, the petals rather deeper than the sepals, a splendid flower; *Odontoglossum* × *Leopardinum* from M. WARCQUGÉ is a fine variety. Other noteworthy plants were *Vanda suavis* var., with a spike of numerous and beautiful flowers, finely coloured, the sepals edged with rose-lilac, the lip dark purple. *Cypripedium Albertianum* from M. DU THIEU DE TERDONCK, and *C. Rothschildianum* from M. WARCQUGÉ, were fine specimens. *C. de B.*

M. SANDER & CIE.—This Bruges firm has now several houses full of imported Orchids, *Palus*, *Araucarias*, &c. There are some fine *Odontoglossums*, notably *O. Wilkeanum*, the flowers with large spots on a very clear ground; three *O. Ruckerianum*, with large flowers and a distinctly marked edge; *O. Hunnewellianum*, with two racemes with seven charming flowers; *O. crispum*, with the lip very broad, square, nicely marked; *O. triumphans*, clear yellow; a good *O. mulus*, and numerous *Lycaste* Skinneri. A large

stage in one of the houses is filled by *Ptychorhapis Augusta*, a dwarf species with numerous delicately poised leaves. *Kentia Sandieriana* is of promise as an indoor plant; *Calanus Alberti* and *Caroli*, *Kentia australis*, with twenty-three leaves; numerous examples of *Heliconia illustris rubricaulis*; ten thousand *Streptocarpus*, which will bloom presently; a fine strain of *Anacochilus Sandierianus*, with free and large foliage; many *Macrozamia elegans*, *Hedera Madeniensis*, and other plants attracted my attention. *C. de B.*

SCOTCH FLOWERS.—Year by year the supply of spring-flowers to the Scottish markets increases; and year by year the supply from places outside Scotland grows less. The reason is not far to seek. The canny Scot is now growing his own spring-flowers for his own markets, and pocketing the profit that used to go to the South of England and the Scilly Islands. Ten years ago the cut-flowers for Scotland came exclusively from the South. Now there are growers in Lanarkshire, Renfrewshire, Stirlingshire, Perthshire; and the nurseries are as complete and extensive as any in the kingdom. At Helensburgh, on the Firth of Clyde, one man alone has raised and disposed of 1,000,000 Tulips this season. The quality of the Scotch blooms is excellent. *Westminster Budget*.

MR. FREEMAN C. S. ROPER'S LIBRARY.—The library of the late Mr. FREEMAN C. S. ROPER, of Palgrave House, Eastbourne, came under the hammer at Messrs. SOTHEBY'S, Wellington Street, Strand, on Friday and Saturday in last week, and attracted very general interest among scientific book collectors. It included a number of valuable works on botany and other branches of natural history, transactions of learned societies, and an exceptionally extensive and important collection of books on the microscope. The collection of 668 lots, representing some thousands of books and pamphlets, realised a total of £1308 15s. 6d. The more noteworthy lots of scientific interest, with the prices realised, are included in the following list:—*Pentham* and *Hooker, Genera Plantarum*, 1862–83, and *Durand's Index*, 1888, £7 2s. 6d.; M. C. COOKE, *Handbook of British Fungi*, 1871, interleaved with copious MS. notes and memoranda by Mr. Roper, with several drawings and a few plates added, with the supplemental volume, similarly annotated, with two autograph letters of the author inserted, £3 3s.; M. C. COOKE, *Illustrations of British Fungi*, 1888–89, with a few MS. notes and corrections by Mr. Roper, £17 5s.; M. C. COOKE, *British Fresh-water Algae*, 1882–84, and the supplement, 1887, £7; A. P. DE CANDOLLE, *Prodrromus*, 1824–73, eighteen volumes, £7 17s. 6d.; R. K. GREVILLE, *Scottish Cryptogamic Flora*, 1823–28, £5 5s.; *Grevillea*, a monthly record of *Cryptogamic Botany*, vols. i. to xxii., 1872–93, £3 15s.; W. H. HARVEY, *Phycologia Britannica*, 1846–51, £3 16s.; Sir W. J. HOOKER, *Journal of Botany*, 1849–57, £3 5s.; *Journal of the Proceedings of the Linnean Society*, Botany, vol. i. to xxx., and five parts of vol. xxxi., and Zoology, vol. i. to xxiv., with general Indices and Catalogue of the Library, £11; Lindley and Hutton, *Fossil Flora of Great Britain*, 1831–37, £2 6s.; J. GERARDE, *The Herball, or General History of Plants*, first edition, a sound and clean copy, in old calf, 1597, £5 12s. 6d.; a copy of the 1633 edition, £3 5s.; a good copy of *The Grete Herball*, printed at "Southwarke," by P. Treveris, 1526, extremely rare, the first English herbal, £39; Dr. R. K. GREVILLE, *Collected Works on Diatomaceae*, with obituary notices of the author, by Drs. Balfour and Lankester, 1855–56, interleaved with MS. notes, and an Index by Mr. Roper, £3 5s. (this lot is from Dr. Greville's own collection, and is probably the only complete set in existence); seven volumes of papers on *Diatomaceae*, Desmazière, &c., from the *Annals and Magazine of Natural History*, by De Brébisson, Gregory, Bailey, and others, with Mr. Roper's notes, &c., 1843–69, £3 5s.; Pritchard's *History of Infusoria*, 1861, with two interesting autograph letters of Mr. Ralf's inserted, £2 8s.; W. Smith, *Synopsis of the British Diatomaceae*, 1853–56, with numerous MS. notes and additions by Mr. Roper, £3 3s.; *Rosy Society*

Publications, from the commencement in 1845 to 1893, £28; P. A. SACCARDO, *Sylloge Funporum*, 1882–96, £27; *Journal of Botany*, edited by Dr. B. SEEMAN, H. TRIMEN, and J. BRITTON, from its commencement in 1863 to October, 1896, £21; J. SOWERBY, *English Botany*, 1790–1863, with the general indices, and the rare supplement, in five volumes, and also Rev. M. J. Berkeley's *Gleanings of British Algae*, forty-two volumes in all, interleaved, and with numerous valuable MS. notes by Mr. Roper, £36—this copy has the supplemental Nos. 2995, 2996, 2997, and 2998 (with letterpress), which have not been published, and are excessively rare; a copy of the third edition of the same work, 1863–92, with supplement by N. E. Brown, £15 10s.; E. Claparède et J. Lachmann, *Études sur les Infusaires et les Zooglydes*, 1858–61, £2 2s.; W. J. Hooker, *British Juncogramme*, 1816, with pencil notes by Mr. Roper, £4 2s. 6d.; Bruch, Schimper, & Gumbel, *Brologie Europæa, seu Genera Muscorum Monographicæ Illustrata*, 1836–64, six volumes, £18 5s.; Dawson Turner, *Fungi*, or *Sea Weeds*, 1805–19, four volumes, with 255 plates coloured from Nature, £3 3s.; J. SOWERBY, *Coloured Figures of English Fungi*, 1797–1815, with 440 beautifully coloured plates, in three volumes, interleaved, and with numerous notes by Mr. Roper, £7 10s.; and W. Turner, A new *Herbal*, wherein are contained the names of Herbes in Greke, Latin, English, Duch and Frenche, 1551, first edition, £6; another copy of the first two parts, but imperfect, £5; and a copy, not quite perfect, of the edition of 1568, £6 6s.

THE LATE COLONEL TREVOR CLARKE.—The collection of Orchids, greenhouse and other plants, also four conservatories at Welton Place, Northampton, which belonged to Colonel Trevor Clarke, recently deceased, will be sold by auction, at the instance of the executors, on Thursday next, April 29. The late Colonel was an ardent plant-lover, and his collection, we suspect, contains some uncommon species.

BERLIN HORTICULTURAL EXHIBITION.—The great exhibition to celebrate the seventy-fifth anniversary of the Horticultural Society of Prussia, from April 29 to May 9, will be one of the greatest shows of this year. We recommend all visitors of the Hamburg exhibition, which opens on May 1, to go first or afterwards to Berlin, because the Berlin exhibition opens on April 28, and lasts till May 9, whilst the Hamburg show does not open till May 7. Never, perhaps, have so many Roses been shown as are likely to be exhibited, together with floral arrangements, also forced vegetables, as well as garden plans at a spring exhibition at Berlin. The total arrangements are very beautiful. The exhibition will be opened by the Empress on the 29th is to be a great meeting for discussion of—1, exhibitions; 2, public sales; 3, of schools for young gardeners.

BOOK NOTICE.

DICTIONNAIRE ICONOGRAPHIQUE DES ORCHIDÉES.

Two fresh issues of the excellent illustrations of Orchids by M. A. Goossens, accompanied by the descriptive letter-press by M. A. Cogniaux, have reached us. They are labelled for *Dendrobium* and *Miltonia*, but, as usual, contain plates for passing into portfolios already issued, and lettered for other genera, as well as those destined to remain in the portfolios in which they are sent. Each issue is accompanied by the little "Chronique Orchidicène," of a suitable size to go in the portfolios, and which it is intended to send with each fresh issue, and thus convey current information relating to Orchids. All the plates issued are well up to the high standard of excellence seen in their predecessors, and although there are no remarkable novelties among the things depicted, yet they form a worthy continuation of interesting series in their different classes. Among the subjects are *Lycaste* Skinneri and its varieties *alba*, *Reginae*, and *delicatissima*; *Cypripedium* are

continued with *C. × Erato*, *C. × Zampa* var. *Phidias*, *C. × Lecanum* var. *Albertianum*, and *C. × triumphans*. The history and essential characters of *Masdevallia* are given, members of the genus well illustrated being *M. Davisii* and three varieties of *M. ignea*. Under *Laelia* appear *L. autumnalis* and its variety *alba*; *Laelia Gouldiana* and *L. amanda*, which is more probably a natural hybrid between *Cattleya intermedia* and *Laelia Boothiana*, than a true *Laelia*. *Cattleya elongata*, which made more stir than it was worth recently, as *C. Alexandria*, appears under its proper name; and other things illustrated are *Odontoglossum × Ruckerianum*, *O. × Coradine*, *Miltonia × Blennum*, *M. vexillaria Leopoldiana*, *Laelio-Cattleya × Corbeilleensis*, *L. C. × albanensis*, *Dendrobium nobile* var. *Ballianum*, and varieties of *Dendrobium Phalenopsis*.

ARTIFICIAL MANURES.

At the meeting of the members of the Royal Horticultural Society at the Drill Hall, on April 13, a lecture was delivered by Mr. J. J. Willis on "Artificial Manures, and their Bearing upon Horticultural Practice," of which the following is an abstract:—

The lecturer stated, that one of the very first requirements for a healthy condition and a subsequent successful propagation of any plant, consists in adopting a well-devised system of soil-preparation and of manuring. There can be little doubt but that an indifferent system of soil-preparation and of the feeding of plants is at the root of a great many well-founded complaints of failure in various branches of gardening, and of fruit-culture in particular. Our views as to use of manures have undergone a considerable transformation during the past few years. Scientific investigation has succeeded in solving a number of most important questions, and we have in consequence been led to adopt new and clear principles relative to the application of manure to our various cultivated plants. Yet, notwithstanding the advance in manurial knowledge, our gardens, orchards, conservatories, and vegetable areas are frequently treated with but little consideration as to their requirements in the matter of plant-food. They are dressed with large quantities of stable-manure or vegetable compost, which may contain but a small proportion of food-sustaining constituents; no thought is given to the waste of certain ingredients, which must necessarily ensue from an excessive manuring with such materials, and how much more useful this manure could be rendered by an admixture with suitable artificial fertilisers.

A system of manuring may be called well-devised or rational when it is based upon the results of a careful examination into the chemical composition of the plants under cultivation, and on a due consideration as to their natural capabilities for availing themselves of the needed food, both from the atmosphere and from the supplies within the soil. The object sought in cultivating plants is usually to produce a growth in some of their parts that is unnatural to the species in its native habitat. This part may be the flower, the seed, the fruit, the stem, or the leaves; or, again, the object may be to obtain an extra large amount of sugar, as in Grape production; or of starch, as in the growth of Potatoes; or it may be to produce leaves with more cellular substance and less fibrous matter, as in Lettuce, Spinach, Celery, Asparagus, &c.; and all this means in the end nothing less than that the opportunities of the horticulturist for controlling the quality of his crops are daily improving.

Each plant has its special wants at different stages of its development. Succulent and rapidly-growing vegetables require an abundant supply of nitrogen in an available form during their early periods of growth; flowers and fruit trees require phosphatic food when blooming and developing seeds. Grape-vines need a large amount of potash during the formation and maturing of the Grapes for the production of sugar; whilst Potatoes require nitrogen and potash for the production of starch in the tubers.

The lecturer next called attention to the chemical composition of various garden products, and to the

amount of fertilising constituents they require for their successful cultivation, and pointed out the fact that in order that plants may obtain all the food materials they require, it is necessary that there be a large excess of them in the soil, probably double the amount shown by an analysis of the crop grown.

The essential elements of plant-food are not needed by different crops in the same invariable proportions at the various successive stages of growth, but are wanted at different periods of their life in different absolute amounts and in different relative proportions; hence it is of the utmost importance that artificial manure should be given at the proper time, and in suitable and fixed proportions, and not at the mere fancy of the grower.

Attention was then directed to the nature and composition of the principal varieties of artificial manures in the market, and to their influence upon the growth of particular crops. The subject was illustrated by various stencilled diagrams, showing experiments on Potatoes in light and in heavy soils, also on Tomatoes and Peach trees, for particulars of which we must refer to the published report of the Society.

The lecturer concluded his remarks by stating that a careful consideration of the different points could not fail to impress the fact that to manure horticultural soils efficiently means to-day something more than to incorporate into them an exceptionally liberal amount of such a varying substance as farmyard manure, vegetable composts, or the like, which may take many years to yield all the effects of which they may be capable. Further, an excessive accumulation of organic matter in the soil is apt to turn it into a breeding-place for injurious insects, or of parasitic productions.

A moderate use of natural manures, supplemented by a suitable addition of concentrated commercial fertilisers, for the purpose of rendering the former more rapidly available, and to force particular forms of garden produce "out of season," should commend itself to the horticulturist on account of the directness with which he can thus reach the object in view. Both good economy, and the preference for a healthy and vigorous condition of our cultivated plants, advise a change from an indifferent system of manuring to one of a more rational character; and it is hoped that this lecture will assist in assigning to these concentrated fertilisers their proper place among the manures of the garden, and indicate how they may be applied efficiently and economically, besides drawing the attention of horticulturists and orchardists to the great value of these manurial substances, which have hitherto been overlooked or but insufficiently appreciated.

SCOTLAND.

NOTES FROM ROYAL BOTANIC GARDEN, EDINBURGH.

Thunbergia mysorensis.—A plant in the stove in this garden is now blooming freely, where it is planted under the stage and trained upon the roof. In this position the racemes are well shown. They are produced from the old wood, and as soon as the inflorescences are discernible, it is advisable to cut out some of the superfluous younger shoots. The corollas are yellow, with a reddish-brown border, about 1½ inch in length. The racemes sometimes bear thirty blooms; and hanging beneath the dark green acuminate elliptic foliage are very conspicuous. It is a very easily grown plant, requiring plenty of sunlight at all times. Under its synonymous name of *Hexacentris* it has been figured in *Bot. Mag.*, t. 4756, which represents the flowers as pure yellow. Under cultivation it is a variable species. The blue-flowered *T. laurifolia*, another good climber where room can be given it to run freely, is also in bloom.

Gesneria cardinalis is probably the earliest to bloom in this genus, and is consequently a valuable plant. It is a remarkably showy plant, with large, brilliant scarlet corollas. Large tubers are formed, which, after flowering, gradually lose their strong stems; and large, light green, hairy foliage. They should

then be rested in a warm-house until they again commence growth, which generally takes place early in January. They will then need to be shaken out and re-potted. A light position in a moist warm atmosphere suits them well.

Viburnum macrocephalum has been in flower here for the past few weeks. It is trained against the wall in the corridor, and the growth of the plant seems peculiarly adapted to this method. The foliage is almost hidden by the snow-white masses of flower. Although not difficult to cultivate, this species is not a quick grower. Its floriferousness may be imagined when I say that the plant here, only about 3 feet high, carries more than thirty trusses of flowers. It is hardy, but is not common in gardens. *V. m. v.* Keteleeri is the sterile form, and is less showy than the type.

Aristolochia Westlandi should be trained upon the roof in a stove. The woody stems are covered with brown hairs; the light green leaves are long, and linear-lanceolate in shape, and placed at considerable intervals upon the stems. In the axils of the leaves are the peduncles bearing single flowers, the perianth being about 6 inches long and 4 inches broad. It is purple, with yellowish veins, the back surface being brown in colour. Mr. A. B. Westland, after whom it was named, discovered the plant in the Kwangtung province of China, and it was figured in the *Bot. Mag.*, t. 7011, from a plant flowered at Kew in 1838. Planted out, it quickly forms a large plant, and if freely exposed to the sun, flowers profusely. *R. L. H., Edinburgh.*

HOME CORRESPONDENCE.

A REMARKABLE MALE FERN.—I have in my possession young plants of a variety of the crested Male Fern (*Lastrea pseudo-macristata*) raised by Mr. Cropper, which are of such a remarkable character as to merit particular mention. In 1895 Dr. Stansfield mentioned the appearance of this Fern in collections, and sent me a small piece of one of the pinnae as material for culture. I pegged this down in sterilized soil, and in the following spring quite a bunch of prothalli had been developed from the tips of the tiny divisions, and a number of young plants were appearing. This season, several of these are growing into plants, thus enabling me better to judge their peculiarities. In the first place, then, it is decidedly the most beautiful crested form of the species, not merely the pinnales, but also the crests being delicately fibrillated. In this respect it excels Mr. Cropper's previous acquisition, *L. p. m. cristata fibrinata*, in its own particular line. Whether this form is the parent, or whether it is a direct sport from the old *L. p. m. cristata*, is not, I believe, determinable, but there is a certain difference of form which inclines me to the latter belief. Apart from its beauty, however, it is distinguished by the fact that it is the first Fern in which "apospory" has been noticed on a crested form as a permanent feature. As a temporary feature in the young state, I exhibited some time since a seedling of *L. p. m. cristata* bearing prothalli; but the resulting plants grew out of the habit. The Fern under notice, however, has all the tips of its fibrillations, crests and all, quite translucent, and these at the slightest encouragement fan out into prothalli, and yield young plants. Another important feature is that these young plants are produced apogamously, i.e., without sexual action, so that we have the two phenomena distinctly correlated here. So second, too, is the plant that I have in my cultures instances of these youngsters being produced from prothalli formed on small fronds, and which have not been pegged down, the optical effect being that of the bulbils of *Asplenium bulbiferum*, with, however, the important difference, that a prothallus precedes the appearance of the bud, and that this is on the under side. The prothalli, when pegged down, seem also capable of indefinite multiplication on their own account, the result of a minute piece being, in my case, a small thumb-pot full of creeping prothalli, which throw up a number of young Ferns from the buds they freely produce as they proceed. These buds throw up primary fronds, which differ from the normal type, and even from those of *L. p. m. cristata* itself, since they are really stalked prothalloid fronds, with thin ragged edges, and even these are capable of developing buds, and a second generation before, as it were, they are themselves fairly launched into existence as Ferns proper

The life-cycle in this case is much shortened. L. p.-m. cristata has been demonstrated by Dr. Barry to be constantly aprotogamous, but it is remarkably fertile in spores, and the prothallus is produced from them in the usual manner. In their descendants, however (whether it will produce spores or not, I cannot yet say), the spore is eliminated altogether, and the prothallus is produced directly from the frond, and becomes merely a medium for bearing asexual bulbils. This peculiar example of re-productive variability has a further interest to the evolutionist, as I understand that Mr. Cropper's Ferns are in which it originated, is one where the shade and humidity—so congenial to Fern growth—are extreme, so that in this instance, at any rate, this sport, as well as the previous one of fibriate peculiarly delicate texture, seems to be the direct outcome of its fostering environments. In this connection, too, Mr. Cropper's remarkable fibriate *Scopolendrium* may be cited. More immediately, perhaps, I should mention that the aprotogamous seedling *Lastrea* above cited originated with me in a close Warden case. With these exceptions, however, the aprotogamous Ferns so far observed have been found wild, and do not owe their peculiarity to high culture. It also becomes a question if such sports as these are the direct results of close culture, or whether their particular characters must not be deemed as "acquired" ones? The asexual, however, which is co-induced, renders the question of their transmission by inheritance an open one, the generations being practically continuous. *Chas. T. Drury, F. L. S.*

APPLE BRAMLEY'S SEEDLING.—Mr. Merryweather is scarcely correct in his quotations respecting the merits of this Apple, as stated by me on p. 240. I there conveyed my impressions concerning this Apple here (South Bucks), and what I could gather respecting it in some neighbouring districts. I should have said that my remarks applied to trees grown as bushes or pyramids; from the nature of its growth, it appears better adapted to orchard standard trees. I believe in Midland districts Bramley's Seedling bears heavily on standard trees, and we all know that some varieties of Apples succeed in certain localities, and not in others. I mentioned Lane's Prince Albert because this variety, planted by me in two different gardens alongside the variety in question, and under precisely similar conditions, is always a regular and heavy cropper (some fruits of which I have yet in store), while Bramley's has never produced a full crop. The awarding of the prizes for this Apple at the Crystal Palace Fruit Show to southern growers does not prove it to be a good or riping variety in those districts, although it may be so. *C. H.*

—To the note in the *Gardener's Chronicle*, p. 210, by your correspondent "C. H.," respecting Bramley's Seedling Apple, I should like to add my testimony. I have found the tree to be a good bearer as a bush and as a tree on the Crab stock; but I am unable to speak of its good-keeping qualities. Here the fruit gets soon spotted, turns soft, and does not keep after it is stored for so long a time as it is represented to keep, which may be due to our heavy, loamy soil, and to moistness of the climate. I have seen fine fruits of this variety in Nottinghamshire, in which county it is thought a great deal of, and I am of the opinion that "C. H." is that it is better suited to the midlands than to some other parts of the country. The trees of which I write have been root-pruned. Lane's Prince Albert is a first-class all-round Apple, and anyone wishing to plant a good cropping and keeping variety cannot do better than plant some of it. The fruits keep better at Liffon than Bramley's Seedling. *F. Q. C., Liffon Park Gardens, Liffon, North Devon.*

THUYAS.—I enclose a spray of *Thuya Devoiana* from a tree planted on the same day as *T. japonica* (Standishi), in the spring of 1873, and growing a short distance from each other on the lawn at the gardens. As growing here, under exactly the same conditions, in a light sandy loam, rather too dry for luxuriant growth of an *Arbor-vitæ*, especially when combined with our comparatively dry climate, the difference between the two species is striking enough! and I can tell the one from the other by their distinct habit and appearance, and I can see them very well. You will notice the silvery underside of the sprays of *T. Standishi*, a characteristic entirely absent from *T. gigantea*, so far as I have observed it in any part of Britain. Another point of difference that is not mentioned in the article is, the cones of *T. gigantea* are always more or less upright, or are seen on the

upper side of the branches; while the cones of *T. Standishi* are as invariably drooping, so far as they have been produced on the specimen here. The last may not be a permanent characteristic of *T. Standishi*, although it has been constant here since the tree began to produce cones a few years ago, 1892. Then, the rate of growth, as the heights marked on the labels indicate, of *T. gigantea* is about double that of *T. Standishi*, growing under similar conditions for twenty-four years. Of the two species, *T. Standishi* is much the better ornamental Conifer for gardens and grounds of limited extent, while *T. gigantea* is undoubtedly the best forest tree among the *Arbor-vitæ*. I am also sending a few rays of two other very ornamental *Arbor-vitæ*—one, No. 3, labelled *T. occidentalis* var. *plexata*, and the other, No. 4, labelled *T. occidentalis* var. *Warreana*; both the same age, and planted at the same time, in 1873, as the first mentioned. All of them were got from the late firm of Billantys & Son, nurserymen, Dalkeith, and were by them believed to be true to name at that time. *T. gigantea*, as already pointed out, grows about twice as fast as *T. Standishi*; about four times faster than *T. occidentalis* *plexata*, and about five times as fast as *T. occidentalis* *Warreana*. They are all very distinct types of *Arbor-vitæ*. *T. occidentalis* *plexata* is a particularly handsome small tree, a perfect golden-coloured cone at this season of the year, and maintains the golden tinge for a long period annually. *T. Warreana* is of a more bushy or spreading habit, and forms a distinct and pleasing object on a lawn among Conifers of a taller and more pyramidal growth. *Miltothian.*

THE RENASCENCE OF THE HOLLYHOCK.—No hardly plant at present in cultivation could be of more use to the gardener, in these days of mixed borders and cut flowers, than the Hollyhock; and any who may be desirous of having the same should begin with seed, which can be purchased from the seedsman. The best time to sow seeds is in the second week of March, the seed-pan being put into heat. When the plants are large enough, they should be potted first into 60's, and then into 48's, and hardened off in time to plant in the borders in May. The stations for the plants should be trenched and manured, and the plants receive good attention throughout the summer, affording water and manure when necessary. During the winter the plants may be protected with branches of Spruce Fir stuck in around them. The result the second year will doubtless exceed the utmost expectations. In order to maintain a stock of vigorous plants, seed should be sown annually, and not grow the plant for a longer time than two years on the same piece of ground. Nothing leads to an attack of the *Peronospora* sooner than growing the plants on the same ground for several years. The days of budding, striking from cuttings, and grafting Hollyhocks, are past and gone, as much as the striking from cuttings of *Crocarias* or herbaceous *Calceolarias*. *D. L. M.*

THE LATE COL. TREVOR CLARKE.—How admirably do you describe this deceased gentleman as a "lovable man." He belonged to a gradually decaying generation of real amateur horticulturists. Among his contemporaries were the Rev. J. M. Berkeley, Mr. Wilson Saunders, Mr. Bateman, Mr. G. Wilson, and some others, dead and living, who were the lights of the Royal Horticultural Society in the old South Kensington days. It is to be feared that we shall not soon look on their like again. The present generation of young gardeners hardly know of these gentlemen. They were potent forces in horticulture in what now seems to be the long ago. A privilege was it—not to be lightly esteemed—in the old Kensington days, to listen to the addresses which these gentlemen would often give in the old council chamber on the subjects shown at the meetings. Would that some such running comments from such able and enthusiastic exponents were possible now! There is, at any rate, very much more material to furnish texts for the eloquent than was found at South Kensington twenty years ago. If Mr. Berkeley was an able exponent of fungi, Mr. Bateman knew what to say of the Orchid, and Major Trevor Clarke generally of everything. We find in the well-known *Red Celery* which bears his name (and may it ever do so) one little memorial of his usefulness; and a once universally-grown *Begonia*, wretchedness, reminds us of the deceased's home. By death, horticulture is thus made distinctly the poorer. We have too few Trevor Clarkes in our midst that we can lose them with equanimity. *F. R. H. S.*

VOLES AND MICE.—I am somewhat puzzled by the appeal of Messrs. Laing & Mather, Kelso,

for information about the vole, and at their postulating the distinction between a vole and a mouse—first, because when the farms in the South of Scotland and about Kelso were, a few years ago, devastated by voles, a commission of inquiry sat to investigate the subject, and everything was elicited in the evidence given that could be, and published in every local paper, voles at that time being the staple topic there among farmers and gardeners. Plans for destroying the vermin were also earnestly solicited at the same time, and if your correspondents knew of an "ancient" but successful method of killing voles by thousands, they have kept the secret till rather late in the day. Second, as to the vole being a distinct "species," nothing has been better ascertained than that the vole differs structurally from a mouse about as much as a sheep differs from a cow, and if Messrs. L. & M. will open the mouths of the first vole and mouse they catch, they will see one of the principal differences between the two. I still doubt the vole's climbing powers, and as your correspondents have reduced the height of the damaged Scots Firs from 4 feet (which statement they *firmly* to some 15 inches, we seem to be coming to an agreement on that point), I apprehend, from the pronouncements given to the subject in both English and Scotch papers by Messrs. L. & M. of late, that our old friend the vole is somewhat of a stranger to them; but I am a little mystified, at the same time, by their present familiarity with its habits and proclivities. Their allusion to "well-known facts" about the vole's tree-nibbling propensities is hardly reconcilable with the fact of their having had to send some 50 miles away to know what was eating their own trees. Was it either the voles or the mice that did the mischief? According to the *Farming World*, April 2, a whole "horde" of voles had invaded L. and M.'s nursery, yet those "close observers" they mention, had not seen so much as one vole on the damaged Scots firs. I surmise this because they did not suspect the cause before writing to Mr. Dunn, and are, probably, only blaming the voles now because they trapped them between the rows. We have similar large quarters of Scots firs in the home nursery here, and mice and voles in plenty, but there was no nibbling during the snow storm, nor since, nor at any other time. *J. Simpson.*

THE JUDGMENTS OF THE FLORAL COMMITTEE.—In his letter to you on *Thilipa Kaufmanniana*—with all of which I entirely agree—my friend, Mr. Elwes, tells how his specimen of *Lilium Thompsonianum* was treated by the Horticultural Society. I knew he was going to exhibit it, and was surprised to find that it neither received medal nor commendation, but that it was entirely ignored. I doubt if the committee will soon have any plant so interesting brought under its notice. I am induced to notice it, because I also have a plant now in flower. Mine is in the open air, and I have had it many years, and this is the first time it has flowered. It is perfectly hardy, but probably does not flower till of good age. I have one spike with over twenty blooms on it, about 3 feet high, but unfortunately injured by the late fogs. The colour of my flowers is paler than as figured by Royle and in the *Botanical Register*. I should like to know whether it has flowered elsewhere in the open ground. *Henry N. Ellacombe, Bitton.*

TRANSPLANTING BRACKEN.—Mr. B. Goldring, p. 260, whose suggestions on the formation and furnishing of landscapes we all gladly welcome, gives some good advice on this interesting subject; though perhaps he hardly goes far enough in the direction that mass is right, that is, success in the transplanting of Bracken. For instance, sods a foot broad or wide (square), where the Bracken is thickest, is capital, but why limit the depth of the sods to not less than 6 inches? A foot or more in depth is far safer and more successful than 6 or 8 inches. In fact, if we are to measure our sods at all, let it be by cube, not square measure. Or if there is to be any difference, as there well may be, let the depth exceed the length and breadth of the Bracken-sods or masses of creeping rhizomes and roots. Neither should the sides of the sod be cut by the spade, previous to or in the raising. This, no doubt, facilitates the raising of them, but the cutting and scoring of the side cuts off the black creeping rhizomes by scores, thus depriving the Bracken of the power of taking speedily and complete possession of its new quarters. My experience is, that the bigger, the deeper, the rougher the edges and bottom of the sods and masses of the Bracken, the sooner it takes possession and furnishes its new home. For

establishing new plantations, back a cart into a thick plantation of the Fern, and load it with pieces of about a yard square of Bracken and soil, and empty the cart where a new colony is wanted, and leave it alone, and your object is gained, the more surely if all regular planting be ignored. Those who want a large mass or acres of Bracken can gain such through accumulation or extension on the same lines. The great merit of this rough-and-ready plan of clothing woods and landscape with this grandest and most graceful of all our hardy ferns is, that we carry the soil with the plants en masse, and they seldom stop growth to look behind them. Why should they? The environments and conditions of growth are transferred with the plants, and the Brackee establishes itself in its new home as a matter of course. True, many of the Bracken pieces may be upside down. But their re-adjustment to novel conditions is not beyond the powers of Fern nature and life. Neither am I so sure of April planting as Mr. Goldring. So soon as the old fronds are matured the transplanting of Bracken en masse may be begun, the end of October and all through November, being the best season. Perhaps the earlier the better, as this affords time for natural consolidation of the soil and roots, and enables the one to take more kindly to the other before the active growing season sets in. Peaty soil and light friable loam enriched with the humus of some decayed leaves, known by gardeners as fluky leaf-mould, is the most congenial for Bracken in old plantations or new. The plant dislikes strong clay, or sodden, wet soil; though one great advantage in planting in solid yard wide masses is, that colonies of Bracken may thus be established on the surface of ungenial and unstable soils and positions. *D. T. Fish.*

NURSERY NOTES.

MESSRS. J. CHARLESWORTH AND CO.,
HEATON, BRADFORD.

CHANGING continually, this enterprising firm have always endeavoured to keep abreast of the times, making specialties of those plants which are popular or most in demand, and taking up each new venture energetically. A few years ago the stock consisted almost entirely of *Odontoglossum crispum* and other showy *Odontoglossums*, *Cattleya Doviiana aurea*, and showy *Orchids* generally, of which their collectors kept them well supplied. But during all this time, Mr. Charlesworth was pursuing the hobby of raising cross-fertilised *Orchids*, and in the earlier stages making quite as many failures in hybridisation as fall to the lot of beginners generally. But careful observation and experiment brought success, and now Mr. Charlesworth asserts that within reasonable limits he can, with certainty, cross and raise plants from seed of anything he wishes to increase. Seedlings of *Cattleyas*, *Lælias*, *Epidendrums*, and *Sophrontis* crossed in every conceivable way occupy a long range of houses, specially constructed for the culture of the hybrids, some 4000 of which, each with its record-ticket, and each standing on an inverted flower-pot, occupies the two first divisions of the range, the seeding plants and innumerable tiny seedlings of later sowings occupying the private houses beyond. *Lælia* (*Brassavola*) *Digbyana*, which gave such good results in the *Lælio-Cattleya* × *Digbyano-Mossiae* raised by Messrs. James Veitch & Sons, have been used as one of the parents in a large number of crosses, some of them very strange combinations, and little plants of each, 2 inches or so in height, have been raised, and now occupy single pots. *Epidendrum vitellinum* has also been successfully crossed in several ways, and little plants secured; and all are in such thriving condition, that the wisdom of putting up the new range, which is now nearly completed to meet the rapid demands for space, is plainly demonstrated.

In the next house, in which the flowering specimens of hybrids are kept, is a fine stock of large plants of *M. Mantii's* *Cattleya* × *Mantini* nobilium (*Doviiana* × *Bowringiana*), a richly-coloured and fragrant winter flowerer; *Sophrone-Lælia* × *Mariottiana* (*L. flava* × *S. grandiflora*), bearing pretty scarlet flowers; a lot of *Lælio-Cattleya* × *Andrea* and *L.-C.* × *Corbellensis*, two pretty continental hybrids; and from

the same source *L.-C.* × *intermedio-flava* and *L.-C.* × *Bertha Fourcieri* (*L.-C.* × *elegans* × *C. aurea*), of which much is expected, and truly it is a noble-habited plant, which will probably flower this year. At the end of the house is a batch of the slender-stemmed *Epidendrums* intended for crossing, commencing with the pretty little white and violet *E. Endresii*, only a few inches high, and passing upwards to the yellow *E. xanthinum*, the scarlet *E. radicans*, the light tinted *E. pauciflorum*, the purple *E. arachnoglossum*, and *E. evectum*, which some class as the same species, but which are here distinct, in size and intensity of colour at least; and behind all, and sending its sprays of flowers forward, are some plants of *E.* × *O'Brienianum*, the first Veitchian cross of the section.

Among the hybrid *Cypripediums*, *C. Jeanette* (*Leeanum* × *niveum*) is a charming white flower, dotted with magenta-rose. Many others of the *C. bellatulum* section of crosses are in bud, some of which will probably be new, and others, doubtless, similar to *C.* × *Chas. Richtman* and others already named.

In the houses devoted to importations was found a fine lot of *Cattleya Mendeli*, and an equally good one of *C. aurea*, and batches of most of the other showy *Cattleyas* and *Lælias* in smaller numbers, especially *L. purpurata* and *L. tenebrosa*, both of which promise to give a grand display of flowers in their season.

In the cool-houses noted in bloom were many *Odontoglossum crispum* of the best type, some of them finely spotted; *O. Halli*, *O. citrosum*, *O. polyanthum*, *O. Rossi majus*, *O. Cervantesii*, *O. aspersum*, *O. Edwardi*, *O.* × *Andersonianum*, &c.; and a number of the cool-house *Oncidiums* of the *O. Marshallianum* section. Among the *Masdevallias* were *M. Veitchi grandiflora*, *M. peristeria*, *M.* × *falcata*, *M. Chestertoni*, *M. bella*, and *M. Winniana*, the darkest and best of its section.

Among the *Dendrobiums* in flower were a number of hybrids of the *D.* × *splendidissimum* type; a batch of *D. Hildebrandi*, which, generally speaking, is not a favourite, but one variety in the batch was remarkably showy, and as large as *D. tortile*, with which it seems to suggest that *D. Hildebrandi* has an origin in common. Other good batches showing flower remarked were *Oncidium concolor*, *Odontoglossum citrosum*, and some of the dwarf *Vandas*, among which in bloom was a plant of the pretty light rosy-lilac *Vanda* × *Charlesworthii*.

Here, as in other places where lath-roller blinds have been tried, they are found to greatly simplify *Orchid* culture, as the houses can be shaded without interfering with the necessary and all-important matter of ventilation. On the *Orchid*-houses, too, it is said that they are a great safeguard against excessive cold at night in winter, and consequently on the most important houses they are left up permanently.

AMERICAN NOTES.

NEW HORTICULTURAL BOOKS.

AMERICAN horticulturists have been more than usually prolific this spring in the publication of new books. Those of most interest are Professor Bailey's *Principles of Plant Culture*, Professor Bailey's *Forcing Book*, Professor Green's *Vegetable Gardening*, and Professor Rolfs' *Vegetable Growing in the South for Northern Markets*. All these are written by professors of horticulture in our agricultural colleges. This is a fact worthy of notice. A few years ago our American rural books were written mostly by men like Peter Henderson, Andrew S. Fuller, and Horace Greeley—men who were not professors of horticulture, and some of whom heartily despised the "scientific farmer" and the college graduate. What a profound change has been wrought in fifty years! All of the books named above, the *Forcing Book* excepted, were written as text books for the classes of the respective authors. Professor Goff's work is an admirable elementary treatise of those parts of chemistry, botany, horticulture, and related subjects necessary in short courses of instruction, or with pupils of very

moderate attainments. Professor Green's book gives directions for the practical management of vegetables in the inclement climate of Minnesota. Professor Rolfs teaches horticulture in Florida, and his book therefore presents the sharpest contrasts to Professor Green's work. Both are necessarily quite local in their practical usefulness. Professor Bailey's *Forcing Book* endeavours to give plain directions for all the work connected with forcing vegetables for market in glass-houses. All these books should be commended for good printing, and for abundant and useful illustrations. *F. A. Waugh, Burlington, Vt.*

LAW NOTES.

A TREE-LOPPING CASE.

Mrs. FLORENCE WALLIS and Captain Robert King are next-door neighbours at Elm Tree Road, St. John's Wood. Their gardens are separated by a wall and a row of nine Lime-trees. These grow in Mrs. Wallis's front garden, at No. 10, and provide for her an agreeable seclusion. On Tuesday, April 13, she sued Captain King in Marylebone County Court for damages for "trespass," and sought an injunction to restrain him from lopping her Lime-trees. The parties were represented by solicitors.

Plaintiff said she had no objection to Captain King pruning away overhanging branches which might prevent his flowers growing. But his gardener mounted a ladder, and sawed off the tops of her trees, and changed the appearance of her garden.

Assistant-Judge Fitzgerald said, if defendant had only pruned overhanging branches he would have been within his legal rights; but he believed defendant lopped them also, and for this plaintiff was entitled to damages. He allowed £3, and granted the injunction. *Daily Mail.*

TRADE NOTICE.

MR. C. SPRENGER, formerly partner in and technical manager of the firm of Danmutter & Co., San Giovanni à Teduccio, near Naples, has ceased his connection with that firm, and has established himself at that place as a landscape gardener, florist, &c., and cultivator of new plants for sale.

SOCIETIES.

MEETING OF THE GHENT CHAMBRE SYNDICALE.

APRIL 5.—At the meeting of the Chambre Syndicale des Horticulteurs Belges, on the above date, the following awards were made:—Certificates of Merit were awarded to M. A. Van Inshoot, for *Miltonia vexillaria* var. *rubra*; M. L. De Smet-Duvivier, for *Anthurium Scherzerianum* var. *Mulane De Smet-Duvivier*; M. A. Van Inshoot, for *Randia maculata*; M. Ch. De Loore, for *Acacia Latrobei*; M. A. Van Inshoot, for *Cattleya Luddenianniana*; Comte Joseph de Hempening, for *Odontoglossum Wilkeanum* var., and for *Oncidium sarodes* var.; M. Oct. Van der Cruyssen, for *Azalea M. E. Chantrier*; M. E. Bedinghous, for *Tremaura verticillata*, and (*per acclamation*) for *Yucca pendula* (*recurva*) medio aurea picta; M. J. Hye (*per acclamation* and *avec félicitations du Jury*), for *Lælio-Cattleya callistoglossa* (*Lælio-purpurata* × *Cattleya gigas*); and to M. H. Millet, for *Livistonia robusta* nana.

Cultural Certificates were awarded as follows:—to M. L. De Smet-Duvivier, for *Aneoctochilus Dawsoniana*; M. G. De Saegher, for *Veltheimia capensis*; MM. Durie frères, for *Davallia dissecta*; and M. E. Bedinghous (*per acclamation*), for *Acacia verticillata*. A Botanical Certificate fell to M. A. Van Inshoot, for *Trypophyllum prodigiosum*. Honourable Mention was awarded to Comte Joseph de Hempening, for *Clivia miniata* var.; and to M. Oct. Van der Cruyssen, for *Azalea Mémoire de Mulane Oct. Van der Cruyssen*.

ROYAL HORTICULTURAL Scientific Committee.

APRIL 13.—Present: Dr. M. T. Masters in the chair; Mr. McLaughlan, Rev. W. Wilks, and Rev. G. Henslow, Hon. Secs. *Aushrooms Raised from Spores*.—With reference to this subject, the following communication was received from Dr. D. H. Scott:—"Mr. Massee, of Kew, has referred me to what seems to be a thoroughly successful solution of the problem,

how to raise Mushrooms from spores. Two French authors, Costantin and Mitrachot, have raised fine varieties true from spores, carrying on their cultures in sterilised food solutions, and subsequently on sterilised manure. The whole development is said to take from six to seven months.—(“Comptes Rendus,” vols. 117 and 118.)

Veronica, Cure-foe.—With reference to this, discussed at the last meeting, Dr. Masters remarked that Mustard as powder, or dug in green, had proved to be effective in destroying this pest.

Daffodil with Red Corona.—Dr. Masters exhibited a blossom having this peculiarity, which occurs also on Cyclamen, Primroses. The structure of the fibro-vascular cords is peculiar in the Daffodil in having its elements reversed in position from those of the perianth itself. It was received from Mr. Dick, of the firm of Messrs. Cooper, Tabor & Co. **Amorosa Alena.**—He also showed specimens of this flower from the Riviera, and also the Greek form with rounded sepals. Several of the former were becoming double, just as is the case in South of France. Dr. Masters observed that the wild *Amorosa A. nemorosus* had become double in his garden during years' growth. Mr. Henslow added that the same had occurred with him; specimens originally single, received ten years ago from woods in Wiltshire, were now semi-double.

Larva of Bibio.—Mr. McLachlan observed that an error occurred in the statement about propagating soil containing the larva of daddy-long-legs, in the report of the meeting on March 9th. It should have been that of a species of *Bibio*.

Tulip Leaves Discoloured.—Mr. Thos. Wanlock of Polegate, Sussex, sent specimens of leaves showing discoloration. They were forwarded to Kew for examination.

Veronica cruenta.—The terms of Dr. Masters sent specimens of the original form of this plant exhibiting different shades of colour as well as a cross between it and the garden form. The latter was of a deep crimson tint.

Daffodils sylvaticus.—Rev. C. W. Dod sent two specimens, each consisting of a flower, of which the stalks were fused for the entire length of the stem. Mr. Henslow said that he had seen the same in one case “the union was by a superficial membrane only; but in the other the combination was complete, the joint space being hollow at the base, without any visible joining.”

Earwigs.—Mr. Wilks brought specimens of this unflattering, which is common in the woods and hedges and open hills about Croydon, the tubers being much eaten by children in that neighbourhood. He remarked that two children, of the ages two and ten, had lately died, apparently poisoned by eating the leaves of some wild plant, but its nature could not be discovered.

Fruit Committee.

April 21.—The first meeting for the season of the Fruit and Vegetable Committee at Chiswick was held on Wednesday last. P. Crowley, Esq., chairman, was present; as also Messrs. W. Barr, J. Willard, J. Smith, W. Pope, C. Herrin, G. Reynolds, G. Wythes, J. Wright, A. F. Baron, G. Bagnard, A. Dean, H. Balderson, and J. A. Laing.

The chief objects before them were forced French Beans, of which a large collection grown in rather large pots was forced in one of the houses. The Committee inspected some two dozen stocks, several being duplicate. All were sown on January 13. The earliest to furnish p. short, fleshy and very green, was *German var.*, Emperor William, which were fit to gather on April 11. It is not, however, so bushy and free cropping a variety as some others. The best of these all being ready on or about April 12, were Osborne's Porching, so valuable for early work, Ne Plus Ultra, probably the best all-round and very prolific. Wythes' Improved Mohawk, product of a cross between the old Mohawk and Canadian Wonder. Veitch's Early Favourite, and Barr's Golden Wax-tail, the best of the dwarf Butter Beans. These five varieties each obtained three marks as forcing Beans. Canadian Wonder, some of Smythe's Hybrids and others had cropped fairly well, but did not seem to be so useful for pot culture as were the varieties named. A desire was expressed that the selected varieties, especially the little known Emperor William, be raised in a frame from a sowing made exactly five weeks previously showed Vilmore's Extra Early, to be much the earliest, Olive Shaped White, and Scarlet, each of these being quite a week in advance of any others. These were unanimously awarded F.C.C. for exceeding earliness as well as excellence. The earliest variety known as Leafless, really a misnomer, because it has leafless, though very short ones, is less useful than these named. The Committee, afterwards viewed some seedling Rubratus, but found nothing of special merit in them. There seems to be nothing superior to Hawke's Champagne and Victoria.

CHESTERFIELD CHRYSANTHEMUM SOCIETY'S SPRING SHOW.

April 19.—The Exhibition of Spring Flowers in connection with the Chrysanthemum Society of Chesterfield took place on Easter Monday, in the gardens of Tupton House, by permission of Mrs. Markham, who is President for the year, and numerous visitors visited the show and inspected the gardens. The Society has been fortunate in having Presidents who are not only possessors of excellent gardens, but who are in sympathy with the objects of the Committee, namely, the fostering among the toiling masses a love for plants and flowers. Thus, in 1895, Tupton Grove, with its

Reek Garden and Daffodils, was the place visited. Last year Ashgate Gardens, on the other side of the town, was the place of meeting; and now this year Tupton House, well known as the old home of George Stephenson, was the place of exhibition. In going through the houses with Mr. Crispen, the gardener, we were pleased to see indications of fine crops of Grapes, while in the Apricot and Fig houses there was also plenty of fruit. Amongst the Peach trees in the houses, attention was drawn to one of Royal George, planted by Stephenson, in 1846, which is carrying a promising crop of fruit. More than sixteen dozens of good fruit were taken from the retreat tree last year.

In the exhibition tent, Messrs. PEARSON & SONS of Chilwell, Nottingham, set up 100 bunches of Narcissus. F. R. MILLS, Esq., of Tupton Grove (gr. Mr. Blokhain), also set up an excellent lot grown in a far less favoured locality than the Chilwell bloom, and he was awarded a 1st prize; a similar prize for 12 vars. of hardy flowers, and premier honours for Chimeras. From the gardens of A. BARNES, Esq., of Ashgate (gr. Mr. Nelson), came the best pots of Hyacinths, Magnolice, Delytras, Orchids, and bunches of stove and greenhouse flowers.

The first prizes for Delytras, Ferns, Primula obovata, and specimen Azalea, were awarded to Mr. Austin, gr. to M. BARR, Esq., of Chesterfield; while Mr. Polkingburn, gr. to Mrs. E. BARNES, showed a finely flowered specimen greenhouse Rhododendron. J. E. CLAYTON, Esq., of Thornfield (gr. Mr. Horsnall), had the 1st prize for flowering and foliage plants. Mrs. BERTON, of Rose Hill (gr. Mr. Money), was 1st for a cheerful looking group of smaller size. A very attractive group, not for competition, came from the gardens of T. F. WOOD, Esq., of Brambling House (gr. Mr. Clements), consisting of many well bloomed Ferns with Japanese Maples intermixed, and edged with Delytra spectabilis and Astile japonica. The hon. sec., Mr. NELSON, also staged a group, not for competition, in which some fine specimens of the old Spirea Aruncus were very conspicuous, proving its amenability to pot culture. Mr. BENS, of Tupton Manor House, brought an interesting collection of hardy Ferns; while another amateur, Mr. M. MASTON, of Chesterfield, staged a creditable miscellaneous collection of plants.

THE WEATHER.

[The term “accumulated temperature” indicates the aggregate amount, as well as the duration, of degrees of temperature above or below 42° Fahr. for the period named; and this combined result is expressed in Days (4° Degrees = 1 Day) of air being above or below a certain number of hours, or any other number of degrees for an inversely proportional number of hours.]

TEMPERATURE.		RAINFALL.		BRIEST SCN.						
Above (+) or below (-) the Mean for the Month ending April 17, 1897.		Above (+) or below (-) the Mean for the Week ending April 17, 1897.		No. of Rainy Days since January 1, 1897.						
Day.	Day.	Day.	Day.	10th	10th					
deg.	deg.	deg.	deg.	inch.	inch.					
0	1	25	16	5	910	73	129	25	22	
10	aver	20	15	19	1	8	66	6	33	24
20	aver	33	10	32	66	3	63	75	26	23
30	aver	42	12	43	107	1	61	79	34	26
40	aver	38	9	21	102	6	64	94	29	24
5	1	36	0	45	107	2	62	104	30	26
6	1	36	9	20	1912	6	68	131	23	23
7	1	32	8	25	7011	1	71	99	24	23
8	1	32	0	37	1281	1	77	169	25	26
0	2	20	12	23	5	9	75	117	27	24
10	aver	35	1	28	3710	7	74	146	32	27
* aver	48	0	114	79	3	32	130	20	28	

The districts indicated by number in the first column are the following:—
0, Scotland N. Principal Wheat-producing Districts—1, Scotland, E.; 2, England, N.E.; 3, England, E.; 4, Midland Counties; 5, England, including London, S. Principal Grazing, &c. Districts—6, Scotland, W.; 7, England, N.W.; 8, England, S.W.; 9, Ireland, N.; 10, Ireland, S.; “Channel Islands.”

THE PAST WEEK.

The following summary record of the weather throughout the British Islands for the week ending April 17, is furnished from the Meteorological Office:—

“The weather continued in a very unsettled condition generally. Rain fell almost daily in the west and north-west, and very frequently elsewhere. Thunder and lightning occurred in many parts of the kingdom during the middle or the latter end of the week.

“The temperature just equalled the mean in most districts but was slightly above it in ‘England, S.’ and below it in ‘Scotland, N. and W.’ ‘England, N.W.’ and ‘Ireland, N.’ The highest of the maxima were registered, as a rule, on the 13th, and ranged from 63° in ‘England, E.’ and 62° in the ‘Midland Counties,’ to 56° in ‘England, S.W.’ and ‘Scotland, W.’ and to 55° in ‘Scotland, N.’ The lowest of the minima, which were recorded on the 11th, varied from 35° in the ‘Midland Counties,’ to 28° in ‘Scotland, E. and W.’ and ‘England, E.’; to 35° in ‘Ireland, S.’ and 37° in the ‘Channel Islands.’

“The rainfall exceeded the mean in all districts. In the south and east of England, the excess was slight, but in all other localities it was very large, the fall in many cases being considerably more than twice as much as the normal.

“The bright sunshine was less than the mean in all districts except ‘Scotland, E.’ The percentages of the possible duration ranged from 34 in ‘England, E.’ and 53 in ‘Scotland, E.’ to 25 in ‘Scotland, N.’ and ‘England, S.W.’ 24 in ‘England, N.W.’ and to 23 in ‘Scotland, W.’”

MARKETS.

VEGETABLE GARDEN, APRIL 22.

[We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Thursday, by the kindness of several of the principal dealers, who review as usual the general average for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding that of our report. The prices depend upon the quality of the samples, the supply in the market, and the demand; and they may fluctuate, not only from day to day, but often several times in one day. Etc.]

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.		s. d. & d.		s. d. & d.	
Anemones, per doz.	bunches ...	1	6	2	0
Arunas, p. 12 bunches	do.	3	0	6	0
Azalea, doz. sprays	do.	0	6	0	9
Bouvardias, per bn.	do.	0	6	0	9
Campanulas, pr. doz.	do.	1	0	3	0
blooms	do.	1	0	3	0
Daffodils, various,	do.	1	0	3	0
dozen bunches ...	do.	3	0	4	0
Encharis, per dozen	do.	3	0	4	0
Hyacinth, 12 sprays	do.	1	0	2	0
(Dutch), boxes	do.	1	6	4	0
Lilac, wh. (French)	do.	3	0	4	0
per bunch	do.	3	0	4	0
Lilium Harris, per	do.	3	0	6	0
doz. bunches	do.	3	0	6	0
Lily of the Valley,	do.	0	6	0	0
dozen sprays ...	do.	0	6	0	0
Maldenian Fern,	do.	0	1	0	0
per doz. bunches	do.	0	1	0	0
Marguerites, per 12	do.	2	0	4	0
bunches ...	do.	2	0	4	0
plains	do.	2	0	4	0
doz. bunches ...	do.	4	0	6	0
Narcissus, various,	do.	1	6	0	0
per doz. bunches	do.	1	6	0	0

ORCHID-PLANT in variety.		s. d. & d.		s. d. & d.	
Adiantum, doz.	do.	4	0	12	0
Aspidistras, per doz.	do.	12	0	30	0
do specimens, each	do.	5	0	10	0
Azaleas, per doz.	do.	15	0	30	0
Cinerarias, per doz.	do.	6	0	12	0
Dracaenas, each ...	do.	12	0	24	0
various, p. doz.	do.	10	0	20	0
Ericas, various, per	do.	0	1	0	0
doz.	do.	0	1	0	0
Evergreen Shrubs,	do.	6	0	24	0
in variety, doz.	do.	6	0	24	0
Ferns, small, doz.	do.	1	0	2	0
various, p. doz.	do.	5	0	10	0

Roots for the GARDEN in variety coming very good.

VEGETABLES.—AVERAGE WHOLESALE PRICES.		s. d. & d.		s. d. & d.	
Artichokes, Globe,	do.	2	6	3	0
do. — (Star)	do.	4	0	5	0
do. chrysothricaria,	do.	0	5	0	0
per lb.	do.	0	5	0	0
Asparagus, English,	do.	4	0	2	0
per bundle	do.	4	0	2	0
Beans, French, lb.	do.	0	9	3	10
— Madeira Kidney,	do.	2	6	3	6
of 5 to 10 lb.	do.	2	6	3	6
Cauliflowers, Coro-	do.	16	0	18	0
wall, per crate	do.	16	0	18	0
Cucumbers, home	do.	0	6	0	0
grown, select,	do.	0	6	0	0
per doz.	do.	2	6	2	0
— per doz.	do.	2	6	2	0
Horse-radish, Eng-	do.	1	6	0	0
lish, pr. bundle	do.	1	6	0	0
— Foreign, per	do.	2	6	0	0
bundle	do.	2	6	0	0
Mint, per bunch	do.	6	3	0	4
Mushrooms (Tudor)	do.	0	7	0	8
per lb.	do.	0	7	0	8

“The market is still firm for samples of good quality. Dumber Maincrop, 50s. to 90s.; do. Saxons, 70s. to 75s.; Lincoln Saxons and Maincrop, 45s. to 70s.; do. Glaxos, 50s. to 60s.; Conary, now, £10 to £14; Gurnsey do., £22 to £28 John Rata, Wellington Street, Covent Garden.

FRUIT.—AVERAGE WHOLESALE PRICES.

Fruit, s. d. s. d.		Wholesale Prices, s. d. s. d.	
Apples, Tasmanian, per case, selected samples	10 0-11 0	Peaches, per doz., 24 0	—
— per case, on ditary samples	7 6-8 6	— Medium, per doz.,	12 0 —
Endive, Channell Islands, per doz.	0 6-0 8	— Seeded, per doz.,	9 0 —
Figs, per doz.	4 0-6 0	Pears, New South Wales, per case	10 0-16 0
Grapes (new), Channell Islands, per lb.	3 6-4 0	Pine-apples, St. Marks, each, each	4 0-7 6
— Belgium, per lb.	2 6-2 9	Strawberries, morning, each, each	2 6-3 0
Melons, Channell Islands, per doz.	2 6-3 0	— packed in boxes, per lb.	1 0-1 6
Nuts, per 100 lb.	70 0-72 6	— each, per lb.	1 0-1 8

FLOWERS IN SEASON.—Some flowers of Mr. WILLIAM BULL'S strain of *Cinerarias* which have been sent for our inspection, are remarkable for the velvety richness of their colours, especially the selfs of various shades of purple; the clear, broad margins of others, and the size and substance of most of them. If the flowers are plentifully produced on the plants, nothing is left to be desired.

NOTICES TO CORRESPONDENTS.

ANNALS FOR SOUTH AUSTRALIA: *Australia.* Any of the annuals indigenous to Australia (Swan River District), very beautiful ones; those from California, Mexico, and the Cape of Good Hope. Those which are tender here would do well out-of-doors, if you have sufficient water supply.

BEGONIAS: *F. Baker.* It is always an advantage to remove the flowers of plants you desire to make rapid progress; and this rule holds good of the tuberous *Begonia*. You might remove the female blooms only, or the flowers of both sexes. If you are not caring for the plants to make any show till they have increased in size.

CAMELLIAS: *H. J. McR.* Your Camellia leaves are disfigured by scaling. The leaves have become heated when wet with water. Give ventilation earlier upon bright mornings. Camellias sometimes require a slight shade.

CORRECTION: *National Aurore Society's Exhibition.* The 1st prizes in the leading class for twelve show Auriculas was reported in error to have been taken by Mr. C. Phillips, Bracknell, Berks; whose collection was placed 2nd; and Mr. A. J. Sanders, Bookham Lodge, Cobham, who was announced as being 2nd, was awarded the 1st prize. Mr. Sanders is to be congratulated upon having attained to this coveted position. *The Reporter.*

CUCUMBERS: *H. S. C.* Probably owing to check to growth caused by eelworms in the soil, examine the roots, and ascertain if there are wart-like excrescences upon any of them. If this is found to be the case, a fresh start had better be made with soil free from the pest.

DISEASED TULIPS: *G. T. L.* Neither the nature nor the nature of the soil have had influence in producing or in accelerating the spread of the disease. The bulbs were affected with a fungus, *Peziza caricivora*, the sclerotia or grains of which existed within the substance of the bulbs when you bought them. So long as the bulb remained quiescent, the sclerotia were also inactive, but as soon as it began to grow the latter began also to grow, eventually causing the destruction of the tissues. Possibly the naked eye would have discovered minute, black, projecting spots on the outside of the bulbs when in the dry or dormant state. For figure and description, see p. 361 of *Gardener's Chronicle* for September 23, 1888.

FIG BRANCHES DISEASED: *R. D.* The branches are attacked by a fungus called *Phoma cinerascens*, Saccardo. This fungus is known for its injurious effects on fig trees in Italy and France. The only means of saving the tree is to cut out and burn all diseased branches. If the entire tree could be sprayed with Bordeaux Mixture, it would prevent further inoculation from the mature spots of the fungus, which are abundant in the examples sent. *E. Massie.*

GETTING A LIVELIHOOD: *Star.* There are many persons now getting a good living by growing Tomatoes, Grapes, &c., and why should not you? The neighbourhood of a large town offers advantages, but it has the drawback of high rents for land and house. We would rather not further advise you.

GRAPE: *St. A.* The fruits are affected with the "spot" fungus, *Gleosporium loticolum*. Cut out and burn forthwith all affected berries, dust the Vines and bunches with flowers-of-sulphur, and paint the hot-water pipes with the same, mixed in lime-wash. You must use sulphur freely in the dressing you apply to the vines another year, or make use of the Bordeaux Mixture.

INSECT: *W. G. A.* weevil; very destructive. Trap them with slices of Carrot or Potato, and go round the house at night.

LAWN GRASSES: *W. B.* If the grasses die out in four months, there must be something in the situation or in the soil injurious to plant life. It is not the presence of worms, these doing good by bringing up soil from below to the surface, and by their burrowings aerating the soil and giving access to the water to lower depths. Is the lawn much shadowed by trees or buildings? If you will answer this question, we shall be enabled to give you the names of grasses best suited to the situation.

LORD ROSEBERRY POTATO: *G. S.* We are unable to find in any list of varieties a Potato of this name.

NAME OF FRUIT: *W. J. B.* Winter Queening.

NAMES OF PLANTS: *Correspondents not answered in this issue are requested to be so good as to consult the following number.*—1, *H. L. Viola odorata*;—*J. B.* 1, *Oxycanthus luteo-purpureus*; 2, *Omitocolum nutans*.—*St. Clara.* The large flower, *Laelia purpurata*, grow in intermediate house lightly shaded; *Cypripedium barbatum* grow warm and tolerably shady. Two short bulbs, *Stanhopea* species, grow in baskets suspended. The yellowish bulb, *Oncidium psacaleatum*. Both the last named grow in warm greenhouses.—*D. M. P. A.* 1, *Ferretia suspensa*; 2, *Griselinia littoralis*, rarely seen in flower.—*G. D.* *Waterford*, 1, *Polygala Dalmaniana*; 2, *Tiarella cordifolia*; 3, *Potentilla fruticosa*; 4, *Onychocarpus*; 5, *Pteris serrulata*; 6, *Asplenium bulbiferum*; 7, *Cymbidium filicatum*.—*P. C.* *Arenaria balsamifera*, *C. W. G.* *Populus balsamifera*, the Balsam Poplar.—*W. C.* *Cytisus praecox*.—*H. E. G.* 1, *Spiraea prunifolia*, double-flowered var.; 2, *Ribes aureum*; 3, looks like *Exochorda grandiflora*, but the flowers are not expanded.—*R. R.* 1, *Pulmonaria officinalis*; 2, *Polygala Dalmaniana*; 3, *Cupressus Lawsoniana* var.; 4, *Myrica Gale*; 5, *Polygonum cuspidatum*; 6, *Spiraea Thunbergii*.—*W. T.* *Kerria japonica*.—*Foreman.* *Swainsonia galatifolia*.

PEACHES: *A. Scott.* The fruits sent are affected by mildew. Apply flowers-of-sulphur, and remove and burn forth with the fruits showing any traces of mildew. If the trees are under glass, paint the hot-water pipes with whitewash and sulphur.

PEACH HOUSE AND APHIDES: *T. L.* You might use Richards' XL All Vaporiser and liquid, but do not fumigate with tobacco before the fruits are as large as filbert-nuts, and then only in a slight degree. Do not sacrifice the leaves because the insects may abound on them, but as soon as the flowers are set afford the trees a heavy syringing with clear water night and morning, and keep this up till the fruits begin to colour.

PEACH-ROOTS: *G. E.* The roots are healthy. Very likely indeed the gas has done the mischief.

PEACH TREE SHOOT: *Wootton.* The leaves are affected by the common Peach blister caused by a fungus known as *Ascomyces deformans*. It is thought by some observers that the cells of the leaves are first ruptured by an aphid or by spring frosts, and that afterwards the fungus appears. What is probably the more correct view is that of De Bary, who has found the fungus in an early stage as living inside the leaf amongst the cells, and at length only emerging to perfect itself upon the exterior. You might spray the leaves with a copper solution, or the Bordeaux Mixture. The fungus was figured in *Gardener's Chronicle* for July 31, 1895, p. 137, and many times subsequently.

PETROLEUM AS A DRESSING FOR KILLING INSECTS ON PLANTS: *H. Ward.* A safe quantity to use is 1 wineglassful to 3 gallons of water. The water used should be soapy, such as that used in washing clothes, with which the oil more readily amalgamates than with water only. The solution might be kept well stirred whilst being used, the oil otherwise coming to the surface.

PLANT ANALYSES: *C. H. C.* Several have been given recently in these pages, viz., Cyclamen, Carnation, Pine-apple, Cherries, &c. A small work by Dr. A.

B. Griffiths on the Constituents of Plants was published a short time since by G. Bell & Sons, 4, York Street, Covent Garden.

PROPAGATING-HOUSE: *H. Ward.* The bed or beds for propagating purposes may occupy a central position, or they may be built along the front or end walls of a house; but not against the back wall if it be a lean-to, unless it be a tall case to be used for tall plants, or for grafting purposes. A bed may be 1 foot deep measuring to the floor of it, or 2½ feet to the floor of the house. It should be provided with an oaken or stove sill, rounded on the outer edge, but flat on the top. The brick wall enclosing the hot-water pipes may be of 4½ or 9-inch work, provided with a few small outlets, fitted with wooden or metal doors. The pipes may number five or six, of 4½-inch diameter, and should not approach the floor of the bed nearer than 1 foot. It is well to have independent flow and return pipes connected with the set of pipes in each section; the connecting pieces being regulated with clapper or screw valves for regulating the flow of water. Some of the sections had better not be fitted with frames, as not all kinds of plants strike well in air-tight frames. Top heat should be afforded in suitable amount, by means of hot-water pipes placed against the walls of the bed, and close to the wall-plates of the house if it be one without side-lights; and some top heat can be obtained by opening the small doors in the walls of the bed, a practice which is always advisable in cold weather. Too much light in a propagating-house is, for obvious reasons, not desirable; and some point to the north and if it be a span it should run north-by-south, and the two ends should be of brickwork. What is wanted is subdued light without the necessity of using shading materials too frequently.

SEEDLINGS: *Iresine.* Your seedling *Iresine*, *Mesembryanthemum*, &c., have "damped off." This is a gardener's expression for the death of young plants owing generally to the soil being too moist for the delicate young roots, hence their decay, and the consequent growth of fungous mould. As you say you have kept the soil rather dry, it may be the result of the soil containing too much manure. Without intimately knowing the conditions under which they are cultivated, we cannot say positively.

VINES: *G. M.* Your Vine is affected with Downy Mildew. See answer to "W. H." in our last issue; also *Gardener's Chronicle* for July 21, 1894, p. 75, where the fungus is figured, and remedial measures described. It may not be necessary to cut the Vine out; follow directions given to "W. H." p. 75. After close examination of your further specimens, we find there is no fungoid disease present. The wretched appearance of the shoots is therefore due to some cause affecting the root—or, at any rate, some part of the plant which has not been submitted to us. It is necessary to examine the culture upon the spot in such a case. The Apple-buds appear to have been attacked by birds, or possibly frost.—*T. L.* We take it that you know nothing about the cultivation of the Vine. The viney was started with too much heat by night and day, and as a consequence the foliage is weak and thin. It will be affected by moulds of various kinds. If no bunches have appeared, there is no probability, judging from the size of the leaves sent, that any will show this season. We would advise you to purchase and read attentively some Manual on Vine culture.

WALNUT TREE: *J. S.* There will be about 15 cubic feet in the butt, worth if quite sound, and 1 the tree was a pollard, perhaps 5s. per cubic foot. If it has a good figure it would make handsome veneer, gunstocks, furniture, &c.

WHITE MARCEAL NIEL ROSE: *P. & Sons.* The variety is similar to one that has been exhibited at the Drill Hall on several recent occasions, and like it, is not pure white, though decidedly pale-coloured. Yours is a good bloom, and could be used amongst white flowers, if arranged judiciously.

COMMUNICATIONS RECEIVED.—M. D.—A. M., South Yarrab.—W. W.—N. B.—H. C. & Sons.—J. D.—G. H. E.—J.—K. D.—A. W.—H. B.—W. S. (GUY, W. H.).—H. W. W. (*Begonias*), you should send a sample for inspection.—A. C. F.—Jno. M. R. T. (with thanks).—W. H. G. C.—H. B.—G. G.—Lousburgh.—D. T. K.—J. Bradshaw.—A. P.—R. D.—Harrison Webb.—A. D.—M.—T. J.—O. H.—A. C. P.—W. H. S.—J. R. J.—G. H. M.—H. M. W. B. E.—J. Macdonald.—Visitor.

SPERMIDS, PHOTOGRAPHS, &c., RECEIVED WITH THANKS.—N. R.



THE

Gardeners' Chronicle.

SATURDAY, MAY 1, 1897.

KEW.

THE brave show of Daffodils and Hyacinths, the glowing colours of the show-house, on which we have lately had occasion to comment, attract the populace, and no doubt effect a worthy purpose. These are things, however, that can be enjoyed elsewhere, whilst there are many other things that cannot be seen save at Kew. It is not the flower-beds that give Kew its pre-eminence. It is not the clouds of Snowdrops, nor the wavy sheen of Bluebells that render Kew so important an auxiliary to the development of our colonies, so serviceable to our home gardens and plantations, or so important as a scientific centre; it is the richness and interest of its botanical contents. On these we now propose to make some comment.

Beginning with the propagating pits, where only the privileged can get behind the scenes, batches of seedlings of such plants as *Myrtecedia* and *Hydnophyllum* as fat as Turnips, may be seen, strange plants, swelling out at the base into fleshy tubers, hollow even here, but in their native countries channelled with innumerable tunnels, the resorts of countless multitudes of ants. Wee to the curious collector who puts his hand on such a shirt of Nessus. Now-a-days imagination comes to the aid of research, and so it is imagined rather than proved, that there is a sort of give-and-take arrangement between the ants and the plants, and that by virtue of such "symbiosis" both are benefited. It may be so, but at any rate in the pits at Kew, there is no obvious relationship to be seen between the little hollow tubers and the ants. Perhaps the Kew ants are not of the right breed.

Here also are *Nepenthes Pervillei*, the Seychelles Pitcher-plant, with crimson pitchers; an extraordinary *Dioscorea* from Sierra Leone with stout spine-bearing roots emerging from a large tuber, for all the world as if meant to protect it from burrowing thieves of the rat order. This plant is exciting much interest among the botanists, as also is a *Morrea* from the Cape, which has roots of similar character, forming a cage as of barbed wire, about the clusters of corms. Here also are now Palms, new Ferns, a new *Impatiens* called *Irvingii* from New Guinea, and not unlike *I. Sultani* from the other side of the African continent; *Dischidias* of sorts growing vigorously, and developing podgy pitcher-like leaves; and baby hybrids of *Disa*, *Streptocarpus*, and *Conandron*, with other still more remarkable crosses, to be heard of later on. A small tank contains young plants of three distinct sorts of *Victoria Regia*, one of which may possibly be a new species; and in a tub of water grows a *Crinum* with long, riband-like submerged leaves, more like a *Vallisneria*, than a *Crinum*. This strange plant was discovered in the Niger territories by Sir John Kirk, and brought to Kew two years ago; it has large pink flowers, which, in the

distance, look like *Nymphaeas* floating on the water. A *Crassula* with the habit of an Aloe; large pans of *Stapelia gigantea* growing like *Cactuses* in a hot, moist house; a pair of *Welwitschias* raised from seeds sent to Kew seventeen years ago, now with long leaves 2 inches wide; new Aloes, new Agaves, new *Cacti*, most of them caviare to the general cultivator, but of exceeding interest to the specialist. A variegated Agave from India, a golden *Furcraea* from somewhere else, an Aloe of extraordinary habit from the Hadramant, and another, mottled like a python, from Somaliland. These, and many more uncommon plants, are to be seen in these pits. Among *Orchids* *Eulophiella* grows like a Leek, as also do *Moorea irrorata*, *Bulbophyllum Ericsoni*, with many other *Bulbophyllums* and *Cirrhopetalums*. *C. robustum* had just developed two large umbels of its enormous green and brown flowers. An odd-looking *Eulophia* from South Arabia, and a batch of fresh arrivals from Sierra Leone, are of the kind that would delight students of the adaptability of plants.

In the house devoted to nursing Cape plants are numerous *Disas*, *Satyriums*, *Holothrix*, and other genera of *Orchids*; *Anemone Fannini*, and a distinct-looking *Ranunculus* from Natal, all of which are attractive; whilst on the roof, in full flower, is a plant, three years old, of the *Fride* of California—*Lathyrus splendens*, with flowers like Sweet Peas, coloured rich scarlet. The queer little *Rosa berberifolia* is also bearing several yellow *Cistus*-like flowers in the same house. An extraordinary *Sansevieria*, with long, thick leaves, like whip stocks, a recent introduction from Nile-land, and said to be a valuable fibre-plant, is represented by a large batch of plants, waiting for warm weather to be despatched to the colonies. New *Musas* from Java and other places are being worked up, as also are the new rubber plant, *Kickxia africana*, and the oil-yielding *Pectadema butyracea*, both from West Tropical Africa.

The Succulent-house.—A big Agave *Botteri* has been in flower here, its spike like a gigantic *Ereunurus*, the flowers yellow, with brown stamens. Close by is *A. Schottii*, a small species, with a slender spike of large bright yellow flowers. *Protea cynaroides*, 9 feet high, with three enormous flower-buds is on the point of opening. *Pitcairna ferruginea* has a tall branched spike, 6 feet high, bearing numerous large rustred and watery white flowers, more suggestive of *Puya* than *Pitcairna*. Aloe *insigis* is a remarkable hybrid raised by Mr. Cooper, of Redhill, who loves these plants as Baron Schroder loves *Orchids*. Numerous *Gasterias* form really beautiful flowering plants, as do a big specimen of *Epiphyllum Gaertneri*, bearing about a hundred flowers, many *Phyllocacti*, several species of *Bomarea*, the best of them being *B. frondea*; and *Aristea Ecklonis* with numerous spikes of rich blue flowers. The enormous *Iris* from Lord Howe's Island, the great *Cereus giganteus* and *Echinocactus Wislizeni* from Arizona, and the striking groups of African *Euphorbias* are always noteworthy features of this house.

Of the contents of the showhouse No. 4, we need say nothing, as it is only recently we alluded to them.

In the Ferneries one might spend many hours with profit, there being so many plants to interest one. The *Filix Ferus* are in fine condition, this collection being, no doubt, the finest in cultivation. *Gleichenias* are also very good here, and in the house where they are grown is a plant of an *Aspidium* from Ceylon, with the black clusters of sori borne only on the upper surface of the frond. It is the *A. anomalum* of Hooker. A collection of *Marsileas*, many of them in fruit; magnificent examples of *Lycopodium*, including one named *Dalhousianum*, with stems 4 feet long; large masses of *Selaginellas*, always well done at Kew, and some good specimens of *Platyterium* may be noted in these houses.

In the Cape-house there have been and are many beautiful bulbous plants in flower. *Geissorhizas*, *Babianas*, *Sparaxis*, *Lacheaalis*, and the rosy-spathed *Richardia Rehmanni*, really tinted with rose all over. It is probable that we shall yet discover how to treat this plant so as to get the colour into the spathe that it undoubtedly has in Natal. *R. Elliottiana*, *R. Pontlandii*, and an unnamed one not unlike the last, are also unfading large spathe. A gouty-stemmed plant, with fleshy cylindrical leaves, enclosed in a net-work of thin wiry-looking branched stalks, which on examination prove to be the old flower-stalks, is a singular inmate of this house. It is called *Cotyledon reticulata* (fig. 95, p. 282), and has lately arrived from the Cape.

The Begonia-house contains scores of beautiful *Begonias* in flower; and the air is quite aromatic with the odours of *Asarums*, of which there are some half-dozen species at Kew, their *Aristolochia*-like flowers being produced in a dense cushion-like mass just above the soil. Their cousins, the *Aristolochias*, are represented by examples of *A. Goldiana* with a purple and yellow flower the size of a coal-scuttle; *A. longifolia*, and *A. saccata*, this last with a large cluster of hairy flowers hanging about the base of the stem like a swarm of huge bees. *Eg* plants of *Tacca cristata* are in flower in the stove, and *Aglaonema costatum* appeals to the love of the beautiful, with its glossy green and creamy-yellow leaves, with numerous white finger-like spathe pushing up from among them.

In the Victoria-house, *Bismarckia nobilis* is magnificent, as also are the double *Coccoloba* Palm; a large specimen *Mediella magnifica* bears scores of racemes of flowers; and the giant *Grammatophyllum speciosum*, which has never looked back since it was presented to Kew by Messrs. F. Sander & Co. four years ago. It may help to render this Jubilee year still more memorable by flowering, as it certainly looks vigorous enough. *Barringtonia samoensis*, with a stem 6 feet high, large, oblanceolate, bright green leaves, and long, drooping, whip-like racemes of large rosy *Myrtle*-like flowers, has also been an attraction in this house.

The Orchid-house.—Here there is a collection which surprises one when one sees the whole of it, and examine it here and there; such names, such pigmies, "such rubbish," many orchidists would say; but to the botanist as interesting, often more so, than the big *Cattleyas* and *Cypripediums*. Here is a list of some new or recently in flower: *Angraecum Germanyanum*, *Bulbophyllum harbergerum*, *Cymbidium tigrinum*, *C. aloifolium*, *Dendrobium Fockelii*, *D. Hildebrandii*, *D. dixanthum*, *Diacrium bicoloratum*, *Eulophiella Elisabethae*, *Epidendrum Parkinsonianum*, *Eriopsis rutidobulbon*, *Elycaste (Colax) jontosa*, *Lelia cinnabarina*, *Oncidium serratum*, *Ongodoglossum Edwardi*, *O. cirrosium maximum*, *O. Reichenheimii*, *Phalænopsis Boxalli*, *P. tetrapsis*, *P. Lueddemanniana*, *Physochloa Moorei*, *Cypripedium nigratum*, *C. niveum*, *C. Chamberlainii*, *C. Victoria-Marie*. Of course, there are the commoner things also, such as big pans of *Cologyne cristata*, many long spikes of *Cymbidium Lovianum*, &c.

Sarracenias growing in the porch of the *Orchid-house*, are always happy at Kew, and they are now pushing into the glory of bloom and new pitchers. *Hellamphora*, *Cephalotus*, *Dionaea*, and *Darlingtonia* are nicely represented. The poppy-flowered *Drosera cistiflora* has gone.

The Palm-house.—In this building is now in bloom *Napoleona imperialis*, bearing numerous crush-hat-like flowers; the *Clavijas* with their stems decked from top to bottom with spikes of orange-yellow flowers, with the odour of Raspberry jam; *Tibouchina heteromala*, with erect racemes of rich blue-purple flowers; *Passiflora racemosa*; *Crimums*, of sorts; the rare *Nicolaia magnifica*, in bud; *Heliconia Bihai*, with boat-shaped scarlet bracts; *Musa rosea*, a most beautiful plant, 10 feet high, with an erect spike,

coaring numerous bracts 8 inches by 4, and coloured bright lavender-rose; Erythrochiton hypophyllanthos, a plant with a long name, long stem, long leaves, and no flower-stalk, the white flowers being attached singly or in pairs to the underside of the midrib of the leaf, about half-way up; *Strelitzia Angusta*, a big specimen, bearing many arm-like spikes of large white and blue flowers; *Coffea arabica*, and the supposed hybrid called *Maragopipe*, both of them bearing crops of ripe Cherry-like fruit; *Macaranga*, with enormous Plane-like leaves, and clusters of small flowers; *Brownea* of sorts, and *Sarcia indica*. These are all, or were recently, in flower. To this house, too, is a good specimen of *Wallichia densiflora*, of which we received in due season a representation on a Christmas-card, from Mr. F. Im Thurn. Fig. 96, on p. 253, shows the Palm in question flowering in Mr. Im Thurn's garden in British Guiana. Palms and Cycads are, of course, the great features of this fine house.

The Temperate-house.—Here *Rhododendron Griffithii*, *R. arboreum*, *R. ciliatum*, *R. kewense*, *R. serrylifolium*, *R. glaucum*, and *R. racemosum* are finely in flower. *Rauunculus grandifolius* is flowering nicely.

The new wing to this fine house is now in the gardener's hands, and is likely to be made a worthy addition to the gardens under glass at Kew.

Of the Arboretum, the Panetum, the Bamboo Garden, the *Rhododendron Dell*, the Rockery, we cannot speak now. *Stachyurus precox* (fig. 97, p. 255), by no means a recent introduction, but which is still little known, flowered in the arboretum early in spring, before the leaves were expanded. Under glass both expand about the same time. Clearly, Kew cannot be seen in a day!

ORCHID NOTES AND GLEANINGS.

ORCHIDS AT HAREFIELD HALL, WILMSLOW.

THE new range of Orchid-houses which Elijah Ashworth, Esq., has built to provide space for his large collection of Orchids, has had good effect on the plants; many of the valuable and rare ones, which the lofty, old-fashioned old houses did not suit, are greatly improved. The new houses are connected with each other by a long one which abuts on them at one end, thus affording shelter, and making it easy to secure an even temperature. In this long house a fine collection of all the best varieties of white and coloured *Lælia anceps* was remarked overhead, which must have made a fine display when the plants were in bloom. Here, too, and in the adjoining vinerias, was found a large collection of the showier *Dendrobies*, some examples of which have been frequently observed at the Royal Horticultural Society's meetings, and notably the immense specimen of *D. nobile nobilium* for which Mr. Ashworth was awarded a Silver Medal.

In the first division of the range above noted are the smaller crosses of *Cypripedium*, as well as some plants of rare species, among which were six *Cypripedium bellatulum album*, three of which were in flower; flower-buds, a number of thriving crosses of *C. Charlesworthii*, out of which some good novelties should be seen; *C. × Olenus* and *C. × Leysianum* in flower and bud, and *C. × Germianum* and others in flower.

The next division of the range is the smaller *Cattleya*-houses, containing the collection of varieties of *Cattleya Dowiana*, and some of the best of the varieties of the *C. labiata* class, such as *C. Mendeli alba* or *Blunti*, of which there are several; *C. Trianaei* *Normani*, and others.

In the third house was a fine group of freshly-imported *Cattleya Percivaliana*, having a distinct habit of growth; and a quantity of *Dendrobium Phalaenopsis*, among which were *D. Phalaenopsis hololeuca*, perhaps the only really pure white variety which has yet flowered. At the end of the house is a newly-constructed frame for the raising of seedling Orchids; and in the same house was a fine lot of *Cypripedium caudatum* *Wallisii* and *C. Rothschildianum*, plants of the latter being in flower.

Then follow several more houses in which were *Cattleya* and *Lælia* chiefly. In these the varieties of *Cattleya Trianaei*, now nearly over, have been grand, and two or three of them have induced visitors to come from long distances to see the plants. At the present season the display consists principally of *Cattleya Schrodera*, one of the best formed and most sweetly-scented of all the varieties of *C. labiata*.

The plants of *Lælia purpurata* are well furnished with flower-sheaths, and among them are the fine white form, the nearest to an albino yet produced by this species, and which is unique; and *L. purpurata Ashworthiana*, which is equally distinct in other directions.

Plants that were noted in flower in the intermediate-houses, were good examples of the true *Dendrobium nobile nobilium*, and other varieties; some very fine *D. × splendidissimum grandiflorum*, *Spathoglottis plicata*, *S. Kimballiana*; some fine specimens of *Miltunia Phalaenopsis*, *Phaius × Cook-*

album, *D. Brymerianum*, *D. Hildebrandii*, *D. × Sybil*, *D. × Juno*, *D. × Owenianum*, *D. × melanoidesum*, *D. × the Pearl*, *D. fimbriatum oculatum*, and the pretty white and violet *Epidendrum Eadresii*.

Traversing the Peach-houses, which, like the vinerias, are in excellent order, and made available by Mr. Holbrook, the gardener, for resting Orchids on occasion, we came to the lofty aid houses, which being built for ornament, are suitable for *Palms*, *Ferns*, and foliage-plants, but not for Orchids. In the first one entered were large plants of the stronger-growing species of *Cypripedium*, and a few of *Phalaenopsis*. In flower were *Cypripedium × Lathamianum*, *C. × Bartlettii*, *C. × Mesasiaticum*, *C. × Sedeni*, *C. × cardioides*, *C. × Adonis*, *C. hirsutissimum*, *C. barbatum Warneri*, *C. Phalaenopsis Schilleriana*, and *Cymbidium eburneum*. In other lofty houses were *Vandas* and other tall-growing species of Orchids, and several well-flowered plants of *Angreum sesquipedale*. *J. O. B.*



FIG. 95.—*COTYLEDON RETICULATA*, KEW. (SEE P. 281.)

soni, a yellow and white form of *P. Sanderianus*, and *Cattleya Lawrenceana*; a fine variety of the white, rose-tipped *Chysis Linnæigii*; a pretty white *Cattleya Trianaei*, with a slight tinge of lilac on the lip; *C. × Hardyana*, and the curious hybrid *Lælia-Cattleya × Pittiana*, illustrated in the *Gardeners' Chronicle*, March 3, 1894, p. 265.

In the cool-houses the showier *Mastodivallia* were beginning to expand their blossoms. The varieties of *M. Chimera* showing well, the *M. Winniana* already in flower being the darkest in colour. Here, too, are *Sophranitis grandiflora*, *Ada aurantiaca*, *Odontoglossum Rossii majus*, and *O. Cervantesii*, *O. crispum*, *O. triumphans*, *O. cirrosum*, and several hybrids of the *O. Andersonianum* type, two of them with peculiar features. In another house numbers of fine *Dendrobiums* in bloom were remarked, one hybrid, probably of *D. nobile nobilium*, being very remarkable. Other species and varieties in bloom were *D. Findlayianum*, and one or two of the white *D. F. Ashworthianum*, *D. nobile nobilium*, *D. n. Victoria*, *D. n. Wrigley's var.*, and *D. n. Ashworthianum*, all good and distinct; *D. × Aspasia*, *D. Wardianum*

VANDA TERES.

This Orchid is now to be seen in superb character at Gunnersbury Park. Mr. Reynolds has it in an elevated position on the west end of the stove-house, in which it is grown, near the glass, in a large box. There is a considerable number of plants planted out, the row nearest the glass being about a foot from it; then comes a passage round to the front of the house, and on the inner side of it a line of twelve more in 24-sized pots, standing upon the brickwork which surrounds the raised bed in the centre. The plants have made a free growth, and are now blooming abundantly, for there are fifty-four spikes of blossoms upon the twelve plants in pots, and a considerable number upon those planted out, especially upon the sizes nearest the glass. The plants are occasionally dewed over with a fine spray, and the hot moisture of the house keeps them in admirable condition. The late Mr. B. S. Williams once wrote of *Vanda teres* that it is a "shy-blooming species," but anyone is hardly a characteristic of those under Mr. Reynolds' care at Gunnersbury Park, as they are decidedly floriferous. *R. D.*

DISA SAGITTALIS.

A few years ago *Disa uniflora*, commonly called *D. grandiflora*, was considered the only species amenable to cultivation, and it was not an uncommon occurrence that many persons failed to keep the plant alive. Since the introduction of *D. tripetaloides* and *D. racemosa*, and the production of a number of showy crosses between them and *D. grandiflora*, we have a large number of handsome, easily managed, varieties, to warrant a greenhouse being set apart for them. There is still much to be done to extend the culture of these plants, for, as proved by the handsome *Disa pulchra*, flowered by the Hoobler, Walter Rothschild, and figured in the *Gardeners' Chronicle*,

The flower is the size of that of an ordinary *O. crispum*, and well formed in all its parts. The dorsal sepal is broader than the inferior ones, and the others favour the ovate-acuminate form; the basal portion is like *O. crispum* in its ground colour, and is furnished with a number of minute Indian-red spots; two-thirds of the segments towards the extremity have the pale-lemon ground-colour of *O. sceptum*, one of the parents, with from two to four large sepia-coloured blotches. The petals are ovate, ensiform at the extremity; the white in the lower portion of their limbs is strongly suggestive of *O. crispum*; the Indian-red spots at this point are numerous. The upper portion is like the other limbs, the blotches being less in

mation that the plant was purchased some years ago as *Houlletia* from Chiriqui, and that it had not yet been identified. It is an ally of *Acineta*, and the plant resembles those of that genus, and the inflorescence is a stout pendulous raceme, produced after the manner of *Acineta*. The expanded flower is nearly 2 inches across; the sepals and petals of a pale Peach-blossom tint, densely speckled with lilac; the curious lip, which has a stalked front-lobe, which possibly suggested *Houlletia*, has the side-lobes erect, and white in colour; the front-lobe speckled with purple. It is one of those sufficiently showy species which, being uncommon, always attract attention. *J. O.E.*



FIG. 96.—WALLICHIA DENSIFLORA IN MR. IM THURN'S GARDEN, BRITISH GUIANA. (SEE P. 282.)

Dec. 26, 1896, p. 785, there are still finer species available for cultivation and for cross-breeding. An example of *Disa sagittalis*, with many spikes of white flowers, which have a few purple lines on them, is now in flower in Mr. E. Ashworth's collection, Harefield Hall, Wilmslow, Cheshire. *J. O.E.*

ODONTOGLOSSUM THOMPSONIANUM.

This beautiful form is a cross in which the traits of both the parents are clearly defined. It is the property of Wm. Thompson, Esq., Walton Grange, Stone (Mr. W. Stevens, gr.), and was exhibited at the meeting that inaugurated the founding of the Manchester Orchid Committee in the Memorial Hall, Manchester, the plant carrying eleven flowers, closely set together, forming quite a Hyacinth-like spike.

size, and more numerous, and there is a shade of white over the lemon-coloured ground. The lip in form is not contracted at all in the middle, and is more white in its lower lobe than any of the other limbs. An immense blotch of Indian-red is planted at the base of the calli, and on either side are spots of reddish colour. The base of the calli itself partakes of an orange ground, with red lines; the column is prominent, and stands convexly, yellowish-white at the back, with a crowd of glandular hairs around it up to the stigmatic surface. *J. Anderson.*

LACENA SPECTABILIS.

A fine inflorescence of eighteen flowers of this rare species is sent by Frau Ida Brandt, Brunnenhof, Riesbach, Zurich (gr., Mr. Schlecht), with the infor-

PRODUCTS OF THE CITRUS TRIBE IN SICILY.

REPORTING on the trade of Sicily, Mr. E. M. de Carston gives some interesting facts connected with the staple products, such as essence of Lemon and other produce of the Citrus family, the different trades dealing in these being of a very interesting character. The Lemon essence industry is a very important one in Sicily, where the abundance of raw material naturally renders the manufacture of the so-called oils of Lemon and Orange a very profitable undertaking; 37,911 kilos. of these essential oils were shipped during the year 1895, over 32,000 kilos. of which was taken by Great Britain.

Oil or essence of Lemon is obtained by pressing or bursting the oil-glands in the rind of the fruit, and this is done either by hand or by machinery; that obtained by the first process being by far the best in quality. In Palermo the essence is all pressed at night. The workmen are supplied with a certain quantity of rinds, divided into equal portions to each between so many gangs, each under the supervision of a foreman. Each man holds two sponges between the fingers of the left hand, and works the rind about in the best way to fracture the oil-vessels. This is caught in the sponges, which, when sufficiently charged with oil, are squeezed into an earthenware receiver; a considerable proportion of the product thus obtained consists of ordinary Lemon-juice left adhering to the rind, together with more or less of the Lemon pulp. This, however, being heavier than the essence, sinks to the bottom of the receptacle, and the essence remains on the top. As the first of these receivers becomes full, the workman blows the floating oil into the second jar through a species of channel formed in the side of the first, and when no more of the essential oil transferable by blowing, the remaining essence which may yet be floating in the original receiver is carefully absorbed with a sponge, and thence squeezed into the second receptacle, which only contains pure essence.

The remainder, namely, the essential oil which may still have been left in the rinds, is by some manufacturers extracted by distillation, and forms a second quality of essence. By others, again, it is expressed by subjecting the partially exhausted rinds to mechanical pressure in bags. To ascertain, however, if the obtainable essence has been thoroughly squeezed out by the original hand process, the rinds are tested by a foreman, who presses the supposed exhausted peel into the flame of a candle, when, if any combustion is visible, it shows that the presses have not done their work properly. The essence obtained by the foregoing process undergoes no further manipulation beyond being collected, and after careful filtration through filter-paper it is ready for shipment in the usual coppers of 100, 50, 25, 12, 5, and 2 lb. each. When freshly expressed it has a delicious smell of the fruit, which is greatly injured by distillation.

From the leaves, flowers, and fruits of the several species and varieties of the Citrus genus a large variety of products is obtained. The blossoms in their natural state serve to flavour drinks and sweetmeats. When distilled they yield two very much esteemed products, namely, orange flower-water and an essential oil known as Neroli. Moreover, when candied, they form a delicious sweet, much in

voguo in some regions of Sicily. The orange-flower-water is made of equal portions in weight of blossom and water, which yield on an average about one-fifth of the combined weight of water and flowers. Notwithstanding the abundance and excellent quality of the raw material, so to speak, still the best manufactories of Orange-flower-water are to be found outside Italy. As to candied sweetmeat concocted out of the blossoms, it is doubtless more wholesome as well as more palatable than many other productions of the confectioner's art. The flowers in the first place are selected with care, weighed, and immersed in cold water for twenty-four hours, after which they are dipped singly in cold water, rewashed in cold, and finally spread out on a linen cloth or sheet to dry. When completely dry, they are laid out in low, wide dishes, each flower separate from its fellow, and are then sprinkled with double their weight in sugar, administered at intervals during a period of eight days or thereabouts. Moreover, during the same period the flowers should be frequently moved and kept in the shade; at the expiration of this time they are once more placed in the sun, whose rays dry them completely.

The raw juices of all the different varieties of the species of Citrus, except that of the Bergamot, are available for commerce; but the juice of the Lemon is the more highly prized, on account of the greater amount of acidity it contains. But the raw juice, "Agro-crudo," however rich in acid particles, can never vie in this respect with the same juice in a concentrated form with the "Agro-cotto," in which form it enjoys besides a great superiority over uncondensed juice in durability and in reduction of volume. This concentrated juice is prepared in the following manner. It is first of all clarified by being left to stand, then boiled in large cauldrons of tinned copper, one-third full, and the boiling liquid frequently stirred with an iron rod having its head wrapped in common canvas, or in rags which have thus to keep the bottom of the boiler clear of all sediment; those necessary additions to the boiling liquid which the constant evaporation of the aqueous particles renders expedient are supplied by smaller supplementary boilers in which the liquid is kept sufficiently hot to hinder any interruption in the ebullition of the juice contained in the large vessels. When the required density is obtained, a point which is easily ascertained through the medium of the citrometer, it is poured into vats to cool, and finally drawn off through ordinary funnels into casks.

The adulteration of the acid or juice is facilitated by the ready absorption of certain well-known and easily-obtainable substances, which increase the weight of the acid-juice when concentrated. The most commonly employed substances for the purpose of adulteration are tartaric acid, chloride of sodium, and sulphuric acid. The methods employed in Sicily in order to detect the cheat, if not so scientific and perhaps less accurate than those in use in England, are at least inexpensive, simple, and sufficiently effective. Citrate of lime, which seems to be the safest form in which the acid principle can be conveyed, and is the substance whence the citric acid is directly manufactured, is now prepared to some extent in Italy, although up to within the last quarter of a century this preliminary process was considered impracticable from a remunerative point of view. A very well known authority on the subject laments in forcible terms the remissness and ignorance of his countrymen in Sicily, which alone permits foreigners to reap that harvest which Italians neglect to gather and garner for themselves. The objections raised in bygone days, from the supposed impossibility of procuring at home a sufficient quantity of proper chalk, have been shown to be utterly mistaken with respect to the production of citrate of lime. Objections of a similar nature are now mooted with regard to the production of citric acid, and have been partially disproved already by the establishment of a British firm in Messina, which has undertaken successfully the manufacture of citric acid in conjunction with tartaric acid.

With regard to the essential oil industry in Sicily, it is said to be both widespread and prosperous,

Essence producers and exporters are numerous. The essential oils are derived from all varieties of the Citrus group, though they differ considerably in quality, that expressed from Bergamot being the best, and then follow the Lemon, Orange, and Citron, the relative value of the essences being in inverse order to that of the juices.

The mode of payment of the workmen engaged in expressing the essential oils is peculiar. Instead of being paid at a fixed rate per day or hour, or for the weight or number of rinds expressed, he is remunerated according to the amount of essence he succeeds in extracting out of a given weight of rinds.

It is stated that, though the bulk of the oil produced in, and exported from, Sicily is quite pure, yet it is sometimes adulterated with other essential oils, and sometimes with turpentine, or even with resin. The occurrence of these adulterations seems to have discredited and unsettled the market value, so that it became necessary, or at least expedient, in some cases to submit it to analytical test before exportation. Owing to these precautions, the character for genuineness of the Sicilian essential oils has been redeemed, or rather maintained. *John R. Jackson, New.*

A PARASITIC AGARIC.

A COMMUNICATION from the Pathologist's Branch of the Department of Agriculture, Melbourne, accompanied by specimens, dried, and also preserved in corrosive sublimate solution, and in solid paraffin, of a small form of *Hypophoma fasciculare*, which is so common here about old stumps, gives the following information. This Agaric is found at the roots of Raspberry-canec, and is causing a great deal of damage. The copious white mycelium or spawn soon destroys the roots. As the ground is generally well cultivated, I had some difficulty in finding the fructification, but in a somewhat neglected plantation I obtained it in abundance. This Agaric grows in dense tufts, and is of a greenish-yellow to golden-yellow colour, becoming reddish at the top of the pileus, which is usually from 1 to 2 inches in diameter. The gills soon become of an olive-green colour; the flesh throughout is yellow and intensely bitter. The spores, about 6 to 7 by 4 μ , are yellowish-brown under the microscope. The specimens received are much smaller than usual, but agree in all other points, even to the size of the spores above stated, being from Australian specimens. Generally the pileus does not exceed from one-quarter to three-quarters of an inch in diameter in its parasitic condition, but there is no room for doubt as to its being the old familiar species.

Hitherto this Agaric has been regarded as absolutely saprophytic, but there are evidently conditions under which it may become a destructive parasite. As it is so common with us, on old stumps everywhere, it will have to be watched for any exhibition of its parasitic proclivities. But little information has been given of its action in Australia, except that it attacks Raspberry-canec, and, by means of a copious white spawn, destroys the roots. That it is becoming a real pest is evident from the attention of the Department having been directed to its action; but, as yet, it seems to confine its parasitism to the Raspberry.

We have no record of parasitism of this species in Europe, where it is extremely common. In the Australian colonies it is recorded for Victoria, South Australia, and Tasmania. Possibly the spawn originated from dead wood, or buried stumps, and impregnated the soil, but whatever the cause of this new development, it will have to be checked by attention to the soil, and the destruction of the pestiferous spawn, by exposure, the application of lime, and other fungicides. The fungus is regarded here as so thoroughly harmless that it may be found in profusion in almost any large garden, and never causes the least anxiety; but these facts will sound an alarm, so that in future a watchful eye will be kept upon the spreading of the spawn of *Hypophoma fasciculare*. *M. C. Cooke.*

SPRING GARDENING AT CLIVEDEN.

The old reputation of Cliveden for spring gardening is being well maintained by the present owner, the Hon. W. W. Astor, and his gardener Mr. Wadds, the borders under the terrace and the large beds stretching away on the lawn being just at the present time very gay, and in a perfectly well-kept condition. The large flower-beds, which are raised somewhat above the lawn level, although on grass, have a high Box-edging which has during the past autumn been entirely replanted with fresh plants, and trimmed into regular shape. A second terrace has also been constructed below the original and well-known one, choice marble pillars and balustrading having been brought over from Italy and used in its formation, being in keeping and design in character with the surroundings. The Vandyke-shaped raised border under the upper terrace is gay with *Violas*, in which the varieties Blue King, Skylark, Souvenir, Cliveden Yellow, Mauve Queen, and Countess of Hopetoun are used, the sloping front being covered with *Aubrietia*, and the angles at the back filled in with Cloth of Gold *Viola*. All the beds on the lawn are now brilliant with Tulips in glowing colours rising from an undergrowth of *Violas*, about 25,000 of each being used. After the Tulips are over, the *Violas* fill up and carry the display on well into the summer. No summer bedding out is now practised, the spring-flowering subjects being allowed to remain until blooming is quite over; but this season it is intended to fill the beds with *Asters* in distinct colours for a late summer display. Four large beds are filled with White Lady *Violas* and Artus Tulips, and the same number of beds with Belle Alliance bright red Tulips, with a groundwork of Yellow Prince *Violas*. Others are planted with La Reine *Tulips*, white, tinged with rose, and a base of Souvenir *Viola* and Couronne Pourpre, dark crimson Tulips, and another yellow *Viola* unnamed. Each of these beds contains some 1500 Tulips, and as many *Violas*; while flowering in a series of beds arranged to form a large circle at a distant part of the lawn, 6000 Golden Prince Tulips, and Cloth of Gold *Violas* are very effective. A new herbaceous garden has recently been formed, which in time promises to become one of the features of the place, although the arrangement in conjunction with clipped shrubs in fantastic shapes would by some be thought out of place, and can scarcely be considered in keeping with the occupants of the herbaceous borders. *Viola*.

HARDY JAPANESE AND CHINESE VINES.

M. L. LINDET contributes to the *Comptes Rendus* for March 15 a paper on "Acclimatising Japanese and Chinese Vines at Damigny (Orne), and on the Wine yielded by them." He says that—"The Department of Orne is situated beyond the extreme limit of the wine-growing districts, and its climate has hitherto been considered as unsuitable for the culture of the Vine, and the ripening of the Grape. For a few years now, M. Caplat has succeeded in acclimatising at Damigny, near Alençon, certain varieties of the Vine, introduced from the cold, damp, and mountainous districts of China and Japan.

These Vines were discovered by Père David, and some seeds were imported into France by M. Henri Degron. Sown for the first time by M. Caplat in 1852, they have since been so far propagated, that it has been possible to send cuttings of them into most of the Departments. The matter has been made the subject of study by Carrière and by V. Pulliat.

The Japanese and Chinese Vines cultivated at Damigny are of vigorous and powerful growth; the branches are lengthened; the petioles, generally various-red or violet in colour, are equally long, sometimes covered with hairs, shaded from red to yellow (varieties of *V. Romaneti*), sometimes covered with spines (*Spinovitis Davidi*); the leaves are sometimes cordiform (*Érécose Caplat*), sometimes bi, tri, and pentolobate, and sometimes even lacinate (*V. Romaneti* and *V. Paguoci*); the bunches, from 8 to

12 inches long, are formed of rounded Grapes, rather far apart, and generally covered with a thin but firm skin, shining, primrose, below which is a pulp almost always dark red, rarely rose-coloured.

One of the most interesting characteristics of some of these Vines is their earliness; this is found in a Japanese Vine, a seedling of *V. Coignetia* (Précoce Caplat), which at Damigny yielded ripe Grapes from the 15th to the 20th of September. This date was only a few days earlier than that of the maturity of other Vines grown in this district (*V. Romaneti*, *V. Paganucci*); *Spluovitis* does not ripen until later—from October 1 to 15; *Carriéri* is still later.

The trials of *Précoce Caplat*, and other districts, tend to prove that this variety resists the common diseases of the Vine well.

M. Lindet publishes a table of analyses of wines made from the above Grape. "A mere glance," he says, "at these figures will show that the quantity of alcohol equals that in our weaker wines, but the quantity of extract, of acidity, of tartar, of tannin, and of ash, is twice as great as in ordinary wines; as to the colour, which is very clear and bright, it is of an intensity four or five times greater than is generally admitted in the wine trade.

"Analysis made in 1896 of wine from the *Précoce Caplat*, vintaged in 1895, shows, further, that these wines lose little by age, the difference in the composition consisting almost wholly of the deposit of a certain amount of tartar.

"It is easy to judge, from analysis of these wines, of the advantages they offer for trade purposes, and for making *vins de coupage, vins de composition*," where they seem suitable for replacing the coloured wines of Spain and Central France.

"Japanese and Chinese Vines might, if cultivated in other places more temperate than the Normandy districts, and especially if these regions were always cool, yield still more interesting results; but at present it is merely certain that, in a relatively cold climate, where wine-making is unknown, they can, owing to their earliness, and the special qualities of their wine, be made particularly useful for viticulture."

METHODS OF PROPAGATION.

(Continued from p. 248.)

FOREST AND ORNAMENTAL TREES.—We now come to a large class—that of forest and ornamental trees, which are raised in nurseries by seed usually sown broadcast. The seeds of some of these require a certain amount of preparation before being sown, and the commoner method is to "pit" them, viz., to dig a hole, and in this to put a mixture of the fruits as they come from the tree, with sand or some kind of light soil, and then to cover with the surrounding soil, and leave the contents undisturbed till the following March or April. A better method is to select a plot of ground in a sheltered spot, make it solid and level with the spade, and then to spread the seeds of the Ash, Maple, or Sycamore, mixed with sand, &c., about a foot thick upon this, pressing it close together by trampling it, neatly levelling the edges with a spade, and covering it with a layer of soil. It should be left undisturbed till the following March or April. On opening the heap, the "keys" or seeds will be found so decayed that the small oval kernels or seeds will come out by simply rubbing them between the hands; or, if the winter has been a wet one, the "keys" may be sown direct from the pit or clamp. Some discrimination is necessary in the selection of the "keys"—as the winged seeds of the Ash and Maple tribe are generally called. As a rule, stunted and diseased trees are the most prolific of seeds; but seed should, if possible, be gathered only from robust trees. Doing this involves more time and trouble being expended, which is, however, well repaid in the vigour and free growth of the seedlings.

Most ornamental trees are grown for their distinct forms, the beauty of their foliage, and many for their flowers, and the bulk of them belong to the natural order Rosaceæ, which embraces the Rose proper, the Thorns, Aronis, Crabs, Almonds, Cherries, Plums,

Sorbus, and Amelanchier. These produce abundance of blossom, which, of itself, makes the tree desirable; and, in addition, they give us bright-coloured fruits, and foliage which, in the autumn, has pleasing tints, thus prolonging their attractions some way into the winter. The fruits afford the natural and best means of propagating all of these which are not merely sports or seminal varieties. The seed has to be made fit for the seed-bed in many different ways. Those of a fleshy nature, as Crabs, Pears, Plums, and

up in the nursery, leaving such a distance from plant to plant, and between the rows, as is best suited to height of the tree; but it is a good rule always to allow plenty of space, and then the subjects, whether deciduous or evergreen, will develop naturally and make good specimens.

The fruits of flowering and other shrubs may be similarly treated; for instance, the juicy berries of the common *Mezereum* (*Daphne Mezereum*) may be rubbed in sand and the seed sown forthwith, as may those of the *Aucuba*, which sow freely in most shrubberies, thanks to the introduction of the male plant from Japan by the late Robert Fortuns. When grown from seed quite thirty per cent. of the young plants prove to be males, while every form of foliage results from the small green leaves of *A. japonica viridis*, to the large variegated ones of *A. j. latimaculata*, and *A. j. crassifolia*; and if berries have been taken from the variety called *A. longifolia*, which is the best to grow in pots for conservatory and winter-garden use, the still narrower-leaved kind will be found among the progeny, called by some *A. saicifolia*; indeed, there seems no limit to the varieties produced. If the fruit is not good fit for man, we have the satisfaction of knowing that all birds of the thrush tribe are very fond of it, and it therefore adds to the often scarce winter fare of these splendid songsters of the garden.

I will now indicate a few more trees and shrubs which are usually raised from home-grown fruits, though there are numbers raised in nurseries from seed imported direct from the natural habitat of the plants, or in some cases from the South of Europe, where these species have been naturalised. The following have all soft fruits that may be rubbed in sand to prepare them for sowing:—*Atropopsis Veitchi*, and other varieties; *Arbutus*, the Strawberry-tree, *Berberis dulcis*, *B. Darwini*, and others; *Cotoneasters*, *Hookeri* and *frigida*; *Hollies*, in variety (want pitting); *Lycocystera formosa*, *Ligustrum vulgare*, and others; *Hypericum hircinum*, and some others; *Rosa rugosa*, &c.; *Sorbus aucuparia*, *S. hybrida*, and *S. intermedia*; *Sambucus racemosa*, and others; *Symphoricarpos racemosus*; *Chamaecerasus* and *Lonicera*.

The following can be either pitted or sown direct into the ground, the first being a saving of time, and perhaps more certain. Alnus (the Alder), all kinds in wet soil; *Amanora fruticosa* and its varieties; *Cercis siliquastrum*; *Colutea arborescens*; *Cytisus Laburnum* and other *Cytisuses*; *Genista* and *Spartium*; *Oleditchia triacanthos*, and *Robinia* in variety; *Staphylea colchica* and *pinnata* (Bladder-wort). *Exopt.*

TREES AND SHRUBS.

THE UPRIGHT CEPHALOTAXUS (C. PEDUNCULATA FASTIGIATA).

I WAS agreeably surprised a short time ago to find no fewer than eight specimens of this uncommon shrub in an old Hertfordshire garden. They had in all cases attained to full dimensions, were in robust health, and showed the peculiar character for which this species of Conifer is remarkable—the lower tiers of branches horizontally arranged with the leaves in two rows, while those further up are strictly fastigate with spirally arranged foliage. In several of the specimens the lower branches covered a spread of from 10 feet to 12 feet in diameter, the foliage being of an intense and healthy green hue. Pollen catkins were produced plentifully on several of the plants, and on both the fastigate and horizontal branches. The soil is a stiffish loam on chalk, and as showing how well adapted this *Cephalotaxus* is for planting in the shade, I might mention that several of the specimens got little or no direct sunshine. I am now almost convinced that there are not three species of *Cephalotaxus*, *C. Fortunei* [pedunculata?] and *C. drupacea* being identical. There are, however, wide differences in the male and female plants. *A. D. Webster*. [1]. *Fortunei* is very distinct. *Ed*]

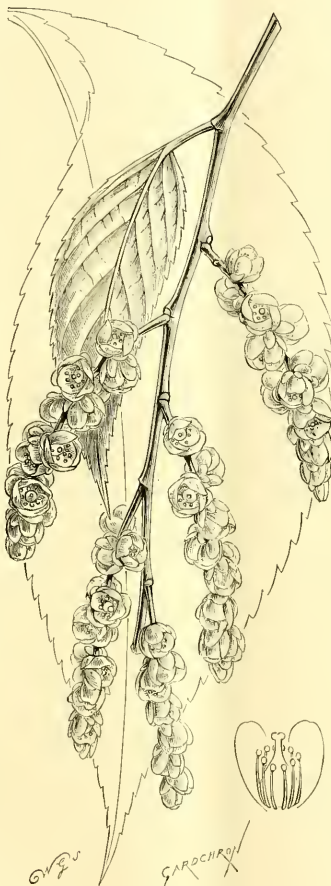


FIG. 97.—STACHYURUS TRILOBUS, BARON, DECIDUOUS, SPRING-FLOWERING SHRUB: FLOWERS, PALE YELLOW; KEW. (SEE P. 252.)

Almonds, by pitting; those of an intermediate character by mixing with sand and clamping; and lastly, those that have soft succulent fruits, as Cherries, Sorbus, and Amelanchier, by being rubbed in sand between the palms of the hands, afterwards allowed to get dry, and then sown sand and all in drills, or in beds broadcast.

There the seedlings may be left for at least two years, when they should be lifted, the tap root shortened with a sharp knife, and the plants quartered

COLONIAL NOTES.

TECOMA STANS, Juss.

On the sides of hills, along the cuttings by the roadside, and in nearly all open localities in the lowland districts, this *Tecoma* is a feature of the flowering vegetation this month (March) in Grenada. Our season, which should be, according to man's idea of the climate of Grenada, dry for the present time, and also for the next two months, is now like an English April month. Dry weather we have had for the past few weeks, and now the nice spring-like showers and the warm, bright sun are hastening many plants and trees into flower, and among them is this *Tecoma*. Grenada folk know it by the name of White Flambeau—although the colour of the flowers is a rich yellow—in contradistinction to the Red Flambeau, the *Poinciana regia*, a member of a different natural order of plants, and a native of Madagascar. The opposite leaves of the White Flambeau are made up of a few long, pointed leaflets, toothed along their margins. The inside of the tubular flowers have several longitudinal red lines, several flowers grow together at the tops of the branches. It is a small tree, or shrub-like bush, and its seed-pods in shape not unlike French Beans. *W. E. Broadway, Grenada.*

THE WEEK'S WORK.

FRUITS UNDER GLASS.

By F. HARRIS, Gardener, Eastnor Castle, Leicestershire.

Cucumbers.—The early plants are now bearing fruits, and should be liberally treated, so as to keep them in vigour, and nothing is better in this direction than top-dressings of the mixture mentioned in a previous Calendar, and manure-water afforded occasionally. The bine must be kept within bounds by pinching the points, removing old shoots and leaves, and allowing young bines to extend, all crowding being avoided. The Cucumbers, if setting freely, should always be thinned out, so as to obtain good-looking fruits, and not exhaust the plants unduly. If red-spider or mildew should become apparent, the plants should be syringed for the former with flowers-of-sulphur mixed with water, and dusted with dry sulphur in the latter case when the leaves are damp. Where Cucumbers are obtained during the summer from hot-bed-frames, the present is a suitable time to start a few of them. Frames which have been in use for early vegetables may readily be adapted for Cucumber and Tomato culture. For Cucumbers the spent soil should be thrown out, and some fresh stable-manure and leaves stirred into the old materials; and if dry, the whole should receive some water, so as to set up fermentation. When this has occurred, put in small hillocks of roughish fibrous loam, and set out the plants, more soil being added as the roots of the plants find their way to the top. The treatment of these frames is similar to that recommended for early houses, covering the lights on cold nights, and taking precautions against strong fumes from the dung. Sow more seeds at intervals in order to keep up a supply of plants.

Strawberries.—The mid-season varieties, if they have been slowly forced, will be now coming into bearing, and if given plenty of air while ripening they will be of grand flavour and appearance. They will require careful attention in the matter of affording water, plants on shelves in forcing-houses requiring water in sunny weather twice if not thrice a day. If any plants get very dry, immerse them in water for a few minutes. The fruits of these varieties may be more freely thinned than was called for by the early fruiters, taking six as the average number of fruits to be left for ripening on plants growing in 32's; and smaller pots than this size should not be used for these, and later fruiters. If the shelves are covered with spent Mushroom-dung, or thin turves, and thin boards about 5 or 6 inches deep are placed edgewise on the shelves, much labour in watering the plants will be avoided. Such varieties as British Queen, Waterloo, and Dr. Hogg, which may be standing in cold frames, will be coming into flower, at which stage the ventilation must be well attended to, and the lights covered at night if frost be feared. Should aphides appear on these plants, fumigate them as soon as the flowers are set; and if mildew be noticed, dip the foliage in a mixture of flowers-of-sulphur and water, which is more effective as a cure than dry sulphur.

THE ORCHID HOUSES.

By W. H. WITZ, Orchid Grower, Burford, Dorset.

Cattleyas and *Leelis*.—*C. Percivaliana*, *C. amethystoglossa*, *C. Gaskelliana*, *C. labata* autumnalis, *C. Harrisoni*, *C. guttata*, *Leopoldii*, *C. Schaffneriana*, *C. Triani* and its many distinct varieties, also such beautiful hybrids as *C. exoniensis*, *C. Lord Rothschild*, *C. Harrisii*, *C. Pheidona*, *C. Fausta*, *Leelio-Cattleya elegans*, &c., are in various stages of growth. Some of them have just done flowering, and are producing a number of young roots from the last made bulbs; others are commencing to break, and as the new growths soon emit fresh roots, in such cases the operation of re-potting or top-dressing should be proceeded with at once. Any plants that have sufficient root for further development should be relieved of the old material from their roots, and be re-surfaced with fresh compost. Unhealthy specimens should be turned out of their pots, and thoroughly cleansed, cutting away all dead roots and useless back pseudo-bulbs, repotting them into pots as small as they can conveniently be put into. In repotting healthy established plants, remove them from the pots with as little mutilation of the old roots as possible. Place the plants into pots of one or two sizes larger, but strictly guard against over-potting. Let each pot be two-thirds filled with crocks, over which it is necessary to place a thin layer of sphagnum to support the compost, which should consist of equal parts of the best sphagnum-moss and fibrous peat. After thoroughly mixing the compost, it is advisable to sift it roughly through a coarse-mesh sieve to get rid of the fine soil. Work some thick pieces of crocks in with the compost in order to prevent the soil from becoming sour. Pot the plants firmly, keeping the base a trifle above the rim, and tie a few of the pseudo-bulbs to neat sticks, that the plant may be held firm. Afford water with great care during the first few weeks after re-potting, as much moisture is likely to cause the old roots to decay. Until each plant is well re-established, simply moisten the compost around the edge of the pot, and keep the surroundings fairly moist by syringing between the pots two or three times a day. By such methods the roots will soon grow and attach themselves to the sides of the pot, when the amount of water at the root may be gradually increased, affording it at moderate intervals in preference to keeping the compost constantly saturated. Until the roots are in full activity, the plants should be shaded from strong sunshine, or some of the older leaves may turn yellow and fall off. Plants of *Cattleya* *Manleyi*, *C. Schilleriana*, *C. Mossiae*, *C. Skinneri*, *Leelia tenellosa*, and the different forms of *L. purpurata*, also *Leelio-Cattleya* *Cabaniana* × *L. C. Arnoldae* ×, and others, whose flower-spikes are developing, will require extra large supplies of water at the root till the flowers expand, when they should be kept rather on the dry side until the new breaks appear. Any plants of the species or hybrids enumerated that have failed to produce flower-spikes, or those that have deteriorated, may be re-potted at once, as the plants generally commence to root at this season. *C. speciosissima* may also be re-potted now, and suspended close to the roof glass of the Mexican house. *C. Walkeriana*, now producing spikes from the apex of a small slender shoot at the base of the youngest pseudo-bulb, is quite distinct from all other *Cattleyas* in its mode of flowering, and in forming its new growth, which commences immediately the flowers fade, from the rhizome at the base of the old flower-stems. For this dwarf-growing species, teak-wood baskets are very suitable, and these should be suspended close to the roof-glass. Very little material is needed for them to root in; in fact, they appear to grow more vigorously when the rhizomes push their way along the edges of the baskets. During the resting season the hard, round pseudo-bulbs of this *Cattleya* rarely shrivel if they are properly matured, but remain plump for several months without receiving a drop of water at the root, and even during the growing season very little water is necessary. *C. Lawrenceana* now in flower should be placed at the cooler end of the house, and when the blooms have faded, the amount of moisture considerably reduced, but not sufficiently so as to cause shrivelling. *C. Bowringiana* is now at rest, and will require identical treatment. The same remarks apply to the lovely *C. Schroterae*. *Cattleya superba* is now commencing to grow may be rebasketed if necessary, and fixed to a piece of tree Fern stem, suspending it near the roof in the hottest house. Afford a moderate shade and an abundance of water until the flowers open, when the plants may be removed to a light position in the *Cattleya*-house to mature their growth. *Cattleya citrina* now producing its handsome and fragrant blooms, should be kept in a cool sunny

house, and afforded only a very limited quantity of water at the root. The flowers will then remain fresh for several weeks. The dwarf-growing *Leelia pumila*, *L. prestans*, *L. Dayana*, and *L. marginata* will require very little root-moisture; and they should be placed at the warmest end of the *Odontoglossum*-house until growth recommences.

PLANTS UNDER GLASS.

By G. H. MAXON, Gardener, Luton Ho Park, Luton.

Euphorbia Jacquiniflora.—Cuttings of this plant which are rooted should be potted off without delay, and before the cutting-pots fill with roots. It is a delicate operation, and must be carefully done, or the plants will suffer greatly; and some growers, to avoid root disturbance and its ill effects, repeat without reviving the cuttings. If the stock is limited, it is of the better way, as there is then no fear of loss of cuttings. Those that are potted must be kept in brick heat for a time, not much water being afforded them before roots have fairly well filled the pots.

Hippeastrum (Amaryllis).—As these bulbs pass out of flower in a cold-house, remove them to a warm one in order to keep them growing, and syringe the foliage night and morning on fine days, closing the house or pit soon in the afternoon. The withholding of water from these bulbs should not take place before the bulbs are thoroughly matured, and the foliage shows signs of maturity. In kinds that have the evergreen habit, the matured condition of the bulb is the only guide. Those who can grow them on a tan or leaf-bed may let them root through the hole in the pots, and when water is withheld if they need not be disturbed before the autumn. When the foliage falls off naturally, the bulbs, if not standing in a bed, may be rested by turning the pots on their sides.

Achinaceae.—Any varieties may now be introduced into heat as required; and cuttings of desired varieties may be taken, which, if inserted in sandy peat, will take root readily. They may be struck in pots in this manner so as to flower them without any re-potting. Afford the cuttings a temperature of 65° to 70°, and the tubers one of 55° to 70°. The latter degree of warmth will likewise suit the earlier successions.

The Fernery.—The watering and syringing of the plants, and the keeping up of the necessary degree of humidity, are matters that require close attention at this season. Should the fernery be exposed on the south side, it must be shaded from the sun. Thrips are apt to infest *Ten* Ferns, and must be watched for, and the plants freed of them by syringing and keeping the stems and surrounding humidity as dry as air always favouring their increase. I do not advise the fumigation of Ferns, but if badly infested, some means will have to be taken, or the fronds will soon become disfigured. In such a case, the infested plants should be removed to another house for vapouring, not fumigating.

THE HARDY FRUIT GARDEN.

By H. W. WARD, Rayleigh, Essex.

Figs.—It is wise to defer the pruning and training of Fig-trees until they begin to push into leaf, which may be about the commencement of May or a little later. The wounds will now bleed but very little, by reason of the opening leaves drawing away the rising sap, which, if the trees were pruned earlier in the season, would flow through the wounds; moreover, it can now be easily ascertained which of the shoots are best furnished with embryo fruits. These, as a matter of course, should be retained, cutting clean away as many old and less fruitful branches as are not required to cover the wall-space allotted to each tree. A space of 6 inches should be left between the branches, and the tree is best trained in the fan shape. One shoot of the current year's growth should be laid in between these in due time, and the points pinched out of any extra strong shoots when about 18 inches long, and the weaker ones at 2 feet. This will promote a balance of growth in the individual trees, assist the fruits to complete their swelling, and tend to the maturation of fruits for the following year. Secure branches to the wall by means of shreds and nails, and be careful to leave sufficient room in the shreds to admit of large growth being made—the same remark applies to trees which are trained to wired walls; the ties of raffia or bast being made so loose that the bark will not be injured. As soon as the pruning and thinning of the trees have been completed, loosen the surface-soil for a space of 3 or 4 feet out from the Fig-wall with a digging-fork,

and then give the entire border a good watering. Lay on a surface-dressing of short dung to the thickness of about 3 inches, and repeat the application of water at the roots several times during each month from May to August. The following varieties are excellent viz., White Maudslayi, Brown Turkey, Castle Kennedy, and Brunswick. The two last-mentioned varieties, under skilful treatment, produce large handsome fruits, fine in quality as well as in size—fruits which, on the exhibition-table or dinner-table are always admired.

Removing Root-suckers from Wall Trees.—Root-suckers should be persistently removed, as they rob the tree considerably when allowed to remain. It is not much use to cut them off with the Dutch-hook; they should be pulled out, using the spade if necessary, and exercising care lest in severing these bunches of suckers from the main roots the latter become injured with the implement in the process. Suckers proceeding from the main stems (stocks) of grafted fruit trees should be rubbed off as soon as they appear. Plums and other kinds of fruit worked on the Plum are the most troublesome in producing root-suckers, consequently a watchful eye should be kept on them.

THE FLOWER GARDEN.

By CHARLES HERRIN, Gardener, Droppore, Maidenhead.

Annals.—In order to insure a fine summer display of annuals, sowings should now be made of the following:—*Bartonia acuta*, *Linum grandiflorum coccineum*, which are excellent for filling odd beds where the usual kinds of bedding plants are not desired, or the supply of the latter is not equal to the demand. For adding to the display in the herbaceous beds and borders, annuals are useful for filling vacant spaces. The best effects are produced not by an indiscriminate mixture of many species, but by the employment of a few, the names of which I give below. At Droppore there are many large beds which are planted with *Paeonies* and other herbaceous perennials, and when the chief sowing of annuals is made at this date, the bare ground in these beds is sown with one species or variety of annual in a bed, the colours being varied; as, for instance, *Linum grandiflorum coccineum* is sown in one; in another *Collinsia bicolor*, in others *Clarkia marginata*, fl.-pl., *Nasturtium Tom Thumbs*, scarlet and yellow; *Godelia* Whitey and *Duchess of Albany*, and others. Where taller subjects would make a nice display, and are permissible, the *Crocopsis* in variety, *Lavatera trimaculata*, *Moloch grandiflorus*, *big*, *Coroniflora*, and *Chrysanthemum Burdigalense*, and others, should be sown. Sweet Peas may be sown in rows, 2 to 4 feet in diameter, on the herbaceous borders, where space admits, placing a few sticks in the centre of each, which they will eventually cover with bine. A few days before the seeds of annuals are sown, the soil should be hoed, so as to kill weeds, and give to the surface a fine tilth, and, if necessary, it should be raked over, to render the surface level, and to remove stones, &c. The sowing of annuals in borders may take the form of lines, and large and small plots or patches, the seeds being scattered broadcast; or in the case of large-sized seeds, sown in shallow drills. Very minute seeds should be sown on soil that is made firm and smooth, covering the seeds with fine soil from the potting-bench, or the border itself. Some seeds may be left uncovered, but protecting them from the birds by pieces of netting, or by hand-glasses. If the seeds are known to be new, or a large percentage of them, as has been proved by testing them in pots in heat, are capable of germinating, they may be sown thickly otherwise rather thick sowing may be advisable. Never let the seeds get water, or lack of timely thinning. If slugs abound, use mixed lime and soot occasionally on moist evenings.

Herbaceous Paeonies.—These showy plants will require to be secured by the ties of bast or short stakes, in order to prevent their falling over, and the flowers lying on the soil and being thereby spoiled; moreover, the effect of a clump of *Paeonies* is finer if the flower-stems be kept erect. Stakes are unsightly objects if conspicuous, and it is my practice with all the stronger-growing varieties, especially those of *P. officinalis*, *P. Fottail*, and others of that type, to pass a piece of tarred string around each clump just under the foliage where the flowers are to bud, drawing the head together fairly tightly, and using no stakes. Treated in this manner they keep erect and spread open just enough by the time they are in bloom to look natural, and show off the blossoms to advantage. For tall-growing varieties with slender stems I use one short stake, to which the string is fastened, the top of the stake being kept out of sight beneath the leaves.

Forsythias.—These handsome flowering shrubs having now mostly passed out of bloom, require, in whatever form they are grown, some amount of annual pruning, and the shoots made now, and those that result from this pruning, will furnish the flowering-wood for another year. The flowering shoots of this year should be shortened back to three or four breaks, and other pruning required may be done at the same time. *Forsythia suspensa* and *F. viridissima* are effective shrubs for planting in the open in the south of England, but in cold parts the shelter of a wall is required by both. As wall plants, the shoots should be nailed-in loosely. If the soil around the bush is found to be exhausted, some of it should be replaced with turfy loam and rotten manure.

THE KITCHEN GARDEN.

By W. POPE, Gardener, Highclere Castle, Newbury.

Beetroot.—Seeds may now be sown for the main crop of Beet on land that was well manured for some earlier vegetable crop, fresh manure causing coarseness of growth at the top and bottom. If the seed be good and fresh, sow thinly in drills 15 to 18 inches apart, and afford a slight dressing of common salt at the same time, raking it in when covering the seeds. The best kind of land for Beetroot is that which is rather light, fairly rich, and of good depth. Let the seedlings be singled in good time to a distance of 3 inches apart in the first instance, and then, if losses should occur, there are plants available for filling the rows later on. For transplanting to be successful, the plants must be allowed to attain a height of not less than 6 inches, and if the job be performed in showery weather, good roots will result. At the final thinning, allow the plants to stand one foot apart. Good varieties are *Dell's Crimson*, *Sutton's Blood Red*, one of the best for general use, the roots being of good colour, middle-size, and the crown short and compact; *Pragwell's Exhibition* is larger, but handsome and good, and is better for exhibition and early consumption; *Cheltenham Green Top* is first-class, has green foliage, and deep red flesh. A little seed of the Turnip-rooted variety sown at the same time will be fit for use several weeks in advance of the long-rooted Beets, and is especially valuable in shallow soils. *Crimson Ball* is a greatly improved form of it. When thinning these Turnip-rooted Beets, they may be left at 6 inches apart.

Beans.—The first sowing of Runner Beans may now be made, for it is only in favoured localities that it is safe to sow these out-of-doors before May 1, as besides their tenderness in a young state, seed sown at an earlier date, germinates badly, if at all. The soil for these should have been deeply dug, and made rich with manure. Sow in drills 7 inches deep, placing the seeds 3 to 4 inches asunder, and afterwards thin the plants to 1 foot apart. In this manner gappy rows are avoided. The surplus plants may be utilised elsewhere, as Beans bear transplanting well. Many prefer to sow double rows, the rows being about 9 inches apart; but for all practical purposes, single rows are to be preferred. The rows should run north and south, and be, at the least, 6 feet apart, a catch crop of some kind being taken from the space between the rows. The best and most succulent Beans are grown in trenches made as for Celery. If Runner Beans are required very early in the season, sow the required number of seeds singly in small pots, and place in a warm house or frame, and as soon as they are well up, repeat them on into 32's, and when re-established remove to a cold frame, always allowing the plants plenty of air. Tie up the stems carefully as growth advances, and harden thoroughly before planting out in the third or fourth week in May. If proper care be taken of such an early sowing, Beans can be gathered a fortnight before those sown in the open ground. For exhibition or general use, nothing surpasses a true *Ne Plus Ultra* No. 1 (Sutton's Best of All); whilst those preferring a white-seeded Bean will find nothing better than *Chelsea Giant* or *Carter's Jubilee*. A good breadth of *Ne Plus Ultra Dwarf Bean* sown now on a warm border will furnish plants that will bear pods some time before the Runners are ready.

THE APIARY.

By EXPERT.

Fumigating Hives.—At this season of the year, when the bee-keeper is busy with his stock, I would offer a word of warning to those who find it necessary to use a fumigator. On Saturday I had occasion to

use the ordinary bellows-fumigator, and inadvertently handled a piece of rag that had been used for dressing an oil-lamp. Of course, instead of smouldering, a flame was urged up through the fumigator, igniting the netting, and enveloping my head in a great conflagration. I received a few nasty burns upon my ears and forehead. I trust this may be a timely warning to other small bee-keepers.

Remedy for Bee-keepers.—For the benefit of bee-keepers who have much to do with bees, I want to give a word of advice to those who get stung more often than is quite pleasant; that is, extract the sting as soon as possible, and apply a little of "Hudson's Dry Soap," mixed into a sort of paste over the place. I find it almost instantly relieves the pain, and stops the swelling. I am sure many bee-keepers will be thankful for the "tip."

Shade for Bees.—Shade is an advantage undoubtedly, but we may have too much even of a good thing. I know of several cases where stocks are always shaded by dense foliage. The hives are consequently green and dirty-looking, and the stocks a little behind those, equally well cared for, standing in the open. Temporary shades might be fixed over the hives during very hot weather, but in such a manner as not to be confusing to the bees when returning home from the fields. In Austria, one noted apiary presents a most pleasing appearance, and it has for the system of shading adopted been much copied. In front of the hive a vine is grown, and trained to a fixed trellis-work. The foliage is a great protection to the hives, besides giving an unusual and picturesque effect to the scene. In England I am not aware that anything of the kind has been tried, probably because we do not experience such a continuance of hot weather as our American cousins. Here, by outer cases to the hives, free circulation of air round the supers, a free entrance, and painting the hives so that the heat is reflected instead of absorbed, we get along without being troubled much by the heat.

The Prospects.—Since my last notes appeared, a very gradual improvement has taken place in things apicultural. That all-important factor, the weather, has mended somewhat; and though the bees are still backward, and at a hope of very early success abandoned, there is yet ample time for me to get into condition for the main honey-flow. A late spring by no means foreshadows a bad season, but rather the contrary. As it was, however, March was a cruel month for the poor bees, and although it finished badly, April commenced worse. During the first week of this month I stood watching the bees issuing from a longish row of hives, and within a few minutes counted several hundreds go forth, and did not see twenty come back. I estimated that during the prevalence of that chilling wind every bright hour cost my outside apiary not less than a pint of bees; in fact, a subsequent examination of the stocks since the change has verified my estimate. Bearing in mind, then, that we are several weeks behind, and that this ground has to be recovered as speedily as possible, I have for the last ten days been syring-feeding, giving good, thick, warm syrup every evening. Then as opportunity occurs, a little store from natural sources being obtainable, my charges are again getting into good heart. The 11th was the turning-point of the season; on that day the air became once again scented with the perfume of the spring. I was glad to see the bees at work bringing in honey-pollen. I was sorely tempted to put a rack or two of shallow frames on, but it is not to be just yet. I have this spring been able to verify the advantage of a bee-house as winter quarters for bees. No stocks of mine in the open equal in strength those indoors, comparisons averaging nine or ten frames covered with bees on indoor stocks against seven or eight frames, and even less, outside.

Spreading Brood.—I would advise all to hesitate before spreading brood nests at present, and even when "spreading" is ventured on, not to do it by inserting an empty comb or, still worse, a sheet of foundation, or may be a starter only. Enlarge the brood-nest if at all from the side, taking the last frame containing a little brood and insert it in the centre; the queen if cramped for room will soon find out this comb, and that there are empty cells in it available for her purpose. Wait, however, till the warmer nights have come to stay before splitting the brood-nest in two by either an empty comb or a sheet of foundation, which is a veritable dummy for the time being, and should a sudden drop in the temperature occur it will cause the majority of the bees to cluster on the side where the queen is. This brings about to a certainty "chilled brood" along the lower margins of the combs on the other side.

EDITORIAL NOTICES.

ADVERTISEMENTS should be sent to the PUBLISHER. Letters for Publication, as well as specimens and plants for naming, should be addressed to the EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be written on ONE SIDE ONLY of the PAPER, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith. The Editor does not undertake to pay for any contributions, or to return unused communications or illustrations, unless by special arrangement.

Illustrations.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, &c., but he cannot be responsible for loss or injury.

APPOINTMENTS FOR MAY.

SATURDAY,	MAY 1	Opening Day of the International Exhibition at Hamburg, Germany. Société Française d'Horticulture, London. Isle of Wight Horticultural Society, Meeting.
THURSDAY,	MAY 6	Linnean Society, Meeting. Ayrshire Gardeners Society, Meet. Brighton and Sussex Horticultural Society, Show.
FRIDAY,	MAY 7	Royal Botanic Society, Lecture.
SATURDAY,	MAY 8	Royal Botanic Society, Meeting.
TUESDAY,	MAY 11	Royal Horticultural Society's Committees and Lecture.
FRIDAY,	MAY 14	Royal Botanic Society, Lecture.
TUESDAY,	MAY 18	Somerset County Agricultural Show, at Minehead (2 days).
WEDNESDAY,	MAY 19	Royal Botanic Society, Summer Exhibition at Regent's Park.
FRIDAY,	MAY 21	Royal Botanic Society, Lecture.
SATURDAY,	MAY 22	Royal Botanic Society, Meeting.
MONDAY,	MAY 24	Linnean Society (Anniversary). Bath and West and Southern Counties Show at Southampton (5 days).
WEDNESDAY,	MAY 26	Temple Show of the Royal Horticultural Society (3 days). Gardeners' Royal Benevolent Institution (Annual Dinner).
FRIDAY,	MAY 28	Royal Botanic Society, Lecture.

SALES FOR THE ENSUING WEEK.

MONDAY,	MAY 3	Carnations, Peonies, Dahlias, Iris, Phloxes, &c., at Frothero & Morris' Rooms.
TUESDAY,	MAY 4	The Hawthorns Collection of Established Orchids, at Frothero & Morris' Rooms. Japanese Lilies and Maples, Carnations and Peonies, Greenhouse Plants, Ornamental Palms, Herbaceous Plants, &c., at Frothero & Morris' Rooms.
WEDNESDAY,	MAY 5	Border Plants, Shrubs, Roses, Lilies, Bulbs, Palms, and Ornamental Plants from Ghent, at Stevens' Rooms.
FRIDAY,	MAY 7	Imported and Established Orchids, from Messrs. F. Sander & Co., at Frothero & Morris' Rooms.

AVERAGE TEMPERATURE for the ensuing week, deduced from Observations of Forty-three years, at Chiswick.—52°.

ACTUAL TEMPERATURES:—

LONDON.—April 28: Max., 66°; Min., 51°.

PROVINCES.—April 28 (6 P.M.): Max., 65°; S. Counties; Min., 44°; Aberdeen.

Our Food Supply. It is conceivable that, in certain concurrent circumstances, our food supply might be cut off, and we should be at the mercy of whatever enemy happened to be attacking us. As to the result, we shudder at its contemplation.* It so happens, happily, that there are a great many "ifs" in the case, and this being so, we can read Mr. MARSTON'S pessimistic book with a little more complacency than would otherwise be the case. It is not within our province to discuss the political or the strategic aspects of the question, but of any of us can see clearly enough

that if Mr. MARSTON'S figures and inferences be correct, we might be in very sad case indeed. Mr. MARSTON shows graphically that we now import over five times more Wheat than we grow. Moreover, it is evident to cultivators that our climate is, relatively speaking, not favourable to Wheat-growing, and that the quality of the product is not so good as that ripened under more favourable conditions.

Mr. MARSTON'S idea is gradually to accumulate an amount of Wheat equal to that imported in one year, and store it against the evil day. This project involves a compulsory exchange of it for the new corn of each year's importation, and other political and financial problems which we must leave to be discussed by those more familiar with the subject. The question we can concern ourselves with is this, what can we do to make our home-grown loaf bigger? Can we do anything? We believe we can, but not with the aid of Wheat. Our climate is too uncertain to permit of that. But there are other cereals, such as Barley or Oats, almost, if not quite, as nutritive as Wheat, which could be grown here with a greater degree of certainty than Wheat. Then there are the pulses—Peas, Beans, and the like—which are considerably more nutritious than Wheat, and which could be grown to help out under the distressing circumstances depicted by Mr. MARSTON. Potatoes, too, might be of service, and green vegetables, roots of various kinds, and hardy fruits, would all serve to ameliorate our unfortunate plight. Of course, it would be difficult to get stores of these things, and it would take time to grow them. At any rate, some of the items we have mentioned would be in store, so that we should not be dependent wholly on the stock of Wheat there might be in the country. It must be admitted, however, that our resources would be of extremely little importance in the face of such a catastrophe as he shows is possible. Fortunately, it is not very probable that we shall ever have any such combination of circumstances to face. But if we do, the gardeners and the farmers must do their parts. The market-gardeners, as it is, get a vast deal more out of the soil than the average farmer does; and the increased knowledge brought to bear on cultural matters now-a-days has a tendency, which is already visible, to render us less dependent on the foreigner than we were. That we can ever be wholly so, it would be chimerical in the extreme to expect; and while we continue to be such good customers to our rivals, there is all the less reason for them to make war upon us. After all, Wheat is not the only food we require, and much of the food which is not derived from that source could, as we have said, be grown within our own boundaries. We recommend Mr. MARSTON'S book to the careful perusal of our readers, for if its perusal has any influence in increasing the amount of our home supplies, and the increase of our food reserves, the feeling of alarm his book is calculated to arouse will be, in a measure, compensated for.

AN UPROOTED ARAUCARIA IMBRICATA (Supplementary Illustration).—The heavy gale of March 3 last committed great havoc in various parts of the country, and many fine trees were levelled with the ground, notably some of the Cedars of Lebanon at Goodwood. Our supplementary illustration (fig. 98) shows a fine specimen, probably one of the earliest-planted *Araucaria imbricata*, standing in Sir ELLIOTT LEE'S grounds at South Lychett, near Poole, which was overturned by the gale. It was planted in 1832, and

was 60 feet in height, and it seems to have had a diameter of 3 feet near the base. Like most of the specimens that have acquired age, the stem was bereft of branches for one-fourth of its height, but the crown was massive and healthy, a fact that must have greatly contributed to its overthrow. *Araucarias* being wide but not deep rooters.

ROYAL HORTICULTURAL SOCIETY.—The following questions were put at the late examination in Horticulture. Eight questions only had to be answered; four from Division A, and four from Division B:—

DIVISION A.

ELEMENTARY PRINCIPLES.

1. What are the three chief mineral ingredients of a soil? Name garden plants or shrubs which delight in each kind respectively.
2. What differences may be expected from growing upright, perfectly ripe, and long-kept seeds respectively?
3. In transplanting, why is it necessary to preserve the extreme and most delicate tips of the root-fibres?
4. Why does covering Rhubarb garden and lengthen the leaf-stalks and stop the growth of the blades?
5. Describe the structure of a Hyacinth bulb, and explain why the Dutch method of shushing or hollowing out the bottom induces the formation of bulbils?
6. What are the essential conditions for successful grafting?
7. How does the structure of a Plum differ from that of an Apple? Explain the origin of each.
8. Name the Natural Orders or Families to which the following plants belong:—Cyclamen, Rhododendron, Clematis, Stock, Pelargonium, Borage, Potato, Onion, Parsley, and Turnip.

DIVISION B.

HORTICULTURAL PRACTICE.

9. Explain the process of cross-fertilisation in garden flowers, and give examples of both hardy and exotic plants that have been improved thereby.
10. After seed of the Chinese Primula has been ripened, describe the method of sowing and subsequent treatment of the plants up to the period of their flowering.
11. What is the native country of the Celery plant, and under what conditions does it grow naturally? Give a short account of its culture, such as time of sowing and subsequent treatment.
12. When, and under what conditions, is Sea Kale found to be a wild state? Describe its culture, and state the time of year it is in use.
13. Where is the common *Asparagus* said to be found in a wild state? State all you know of its culture, and for how long a period it may be had in use.
14. Give an account of the Apple. How are the trees propagated? State what you know of its culture, and the diseases to which the trees are liable, and the remedies. Name one good cooking variety for use in each month from August to April inclusive.
15. State all you know about the Raspberry. What sort of soil is best adapted to its culture? Give method of training and pruning, and the best varieties to cultivate, both yellow and red.
16. Give an account of the usual method of Gooseberry culture adopted in gardens; and also the Laneshire method to obtain prize fruit. Name six of the best prize varieties, and six best for ordinary garden culture.

"KEW BULLETIN."—"Appendix ii, 1897" is devoted to an enumeration of all the new introductions in the way of garden plants during 1896. Such lists are very valuable in botanical libraries, and on editor's tables. We trust that at the end of every quinquennium, an index of the names published in the preceding period will be issued.

HAMBURG GENERAL EXHIBITION.—During the last few days an important addition to the objects sent to the exhibition has come to hand from Messrs. W. A. MANDA, South Orange, New Jersey. These will be exceedingly interesting to the German amateurs and gardeners, as they consist almost exclusively of novelties from Japan, and are still unknown on the Continent, as Lilies, Peonies, Acers, and carnivorous plants, said to be capable of enduring a continental winter. Among this contribution of Mr. MANDA'S are American novelties in Roses and Cannas.

THE CARROT-FLY (PSILA ROSÆ).—The Board of Agriculture has issued a leaflet dealing with the life-history of this injurious insect, and the best means to adopt to get rid of it. Carrots are frequently much injured by the larvae or maggots of this fly, which bore into and feed upon their roots, living upon them, and causing them to become brown or rusty, and finally rotten. Early Carrots are not often

* War, Famine, and our Food Supply, by R. B. MARSTON (SAMSONS, LOW, MARSTON & CO.).



FIG. 98.—*MALVACARIA IBERICA* AT SOUTH LYCHETT, OVERTURNED BY THE WIND, MARCH 3, 1897. (SEE P. 288.)



materially injured, as the fly does not, as a rule attack the roots until the middle of May. Carrots badly attacked by this insect have deep cracks in the roots in which the larvae are found. These frequently extend to the centre of the roots, and cause them to rot. The tops become brown, and wither away, and in the early stages of the attack, when as yet there are only a few larvae in the roots, the foliage changes and betrays their presence. Copies of the leaflet can be obtained free of charge and post free on application to the Secretary, Board of Agriculture, 4, Whitehall Place, S.W. Letters of application so addressed need not be stamped.

THE LATE W. G. HEAD FUND.—This has now been closed, and the balance, after payment of medical, funeral, and other accounts, has been handed to the widow, who desires to most heartily thank all who so kindly assisted in meeting the very heavy expenses incurred during her husband's long and painful illness.

BARLEY AS A BASE FOR PORT WINE.—Agriculturists generally, and in the eastern counties especially, may be pleased to learn that their Barley crops can be placed to other use than now obtains, that, with the assistance of the laboratory expert, they may become manufacturers of port wine! This is on the authority of H. B. M.'s Consul at Naples, who, in describing the operation, says:—"The Barley is first malted, then the bacilli of port wine are introduced into the mash, where they fermente incontinently and transform it from immature beer into the richest port. When the animalcule have done their work they can be sterilised, a sufficient stock of microbes being preserved in the laboratory for further use." Perhaps the Board of Agriculture, or some energetic agricultural society, will take the matter in hand and furnish our agriculturists with a new industry, a new means of paying the rent; or perhaps better still, those who now occupy themselves with brewing "a peck or maot," or larger quantity, may find it to their profit to turn out port from Barley-mead by the hoghead.

ORCHIDS IN FLOWER AT MESSRS. PROTHEROE & MORRIS' ROOMS.—At every Orchid sale at Messrs. PROTHEROE & MORRIS' Rooms, Cheapside, an interesting display of these plants in flower may be seen, and probably many a casual visitor is thereby induced to commence cultivation of Orchids. On Friday, April 23, there was an unusually fine display, consisting of Cattleyas, Lawrenceana, Schrodera, Schilleriana, Mossia, citrina, Achlanthe, and Mendell; *Laelia purpurata*, and others. *Odontoglossum*, triumphans, crispum (some of the forms being finely spotted), *Pescatorea*, Hallii, cordatum, Roezlii, cirrosum, Ruckermanum, and many crosses. Among *Cypripediums* there were in flower about fifty different species and crosses. A large number of *Dendrobium*s, one fine specimen of *D. Dalhousieanum* being worthy of an exhibition stand. Of *Oncidium*s, *Vandas*, and other genera, there were also numerous representatives.

NEW CORN PRODUCT.—The discovery that the pith of the corn stalk can be used in the construction of war vessels is likely to be of benefit to agriculture in more than one way. The chief use of this pith is for a packing between the inner and outer shells of the vessel, so that when pierced by a projectile it will absorb water and swell so rapidly as to close the opening before the vessel leaks to a dangerous extent. Experiments with this pith have been so satisfactory that it has been adopted in the construction of all our new vessels of war, and European nations have commissions for investigating the same material, so that the use of corn pith will make a market for what was once a waste product. In the process of extracting this pith the blades and husks are removed, and the stalks are cut into small pieces. When the pith is taken out from this stalk, the remainder is ground up into a flour-like substance which resembles bran. Some experiments with this "new corn product," as it is called, have been made at the Maryland Station with the remarkable result that it is found to contain eleven per cent. more of digestible matter and

two per cent. more of digestible protein than the whole fodder does when shredded. It contains as much digestible matter as the corn blades, and more total digestible matter and half-of-one per cent. more protein than Timothy hay. It does not contain as much digestible albuminoids as Wheat bran, but it equals that food in the total amount of digestible matter. It keeps as well as bran or Cotton-seed meal. It is in such condition that it can be uniformly mixed with any ground grain, and when used as a base it is possible to make a complete and normal ration for stock in one bulk without the necessity of feeding grain and hay separately. Animals fed upon such a ration eat it with relish, and keep in normal condition. Since there is only one pound of pith to fourteen pounds of blades, husk, and stalk, this new material amounts to a very considerable portion of the fodder. *Garden and Forest.*

BULLETIN DE LA SOCIÉTÉ FRANÇAISE D'HORTICULTURE DE LONDRES.—We have just received a copy of the annual bulletin for the past year, and are much gratified to find that substantial progress during 1896 has to be recorded. The French Horticultural Society of London has long been doing an excellent work, and its President, Mr. GEORGE SCHNEIDER, of whom a capital portrait is given as a frontispiece to the volume now under notice, is deserving of the warmest encouragement in his efforts to promote and extend good feeling among English and Continental gardeners and nurserymen. From a financial and numerical standpoint, the Society must be congratulated. Many of the leading horticulturists in England and abroad have lent their support to the work that is being accomplished, and the interchange of situations between young gardeners on both sides of the channel cannot fail to have a beneficial effect on those who have the courage to expatriate themselves for a while in order to enlarge their knowledge and experience. Briefly stated, the contents of the *Bulletin* comprise the annual report, rules, lists of officers and members; proceedings at the meetings, including the last annual dinner, which was presided over by Mr. GEO. NICHOLSON, of Kew, and was unquestionably one of the most successful ever held; the balance sheet, contents of the Society's library, and the best of the papers read by the members on various subjects of horticultural interest. All particulars concerning the Society can be obtained from the Secretary, at the head-quarters of the Society, 19, Old Compton Street, Soho, W.C.

OROBANCHE ON HUMEA.—MESSRS. H. CANNELL & SONS send us a plant of *Humea elegans* killed by the growth on it of *Orobanche minor*. We never saw the *Humea* attacked before. Doubtless, the seed of the parasite was introduced with peat.

PHYLOXERA REGULATIONS AT THE CAPE.—We are pleased to see that the Cape Government has at last repealed the vexatious and useless restrictions on the importation of plants, other than Vines. We have protested against these absurd rules up till now in vain, so that it is pleasing at length to see some signs of the abatement of these mischievous enactments.

"ONE AND ALL GARDENING."—This is described as being a "popular annual for amateurs, allotment-holders, and working-gardeners," and certainly for the price asked (2*d.*) is well worth the consideration of all these classes. It is edited by Mr. EDWARD GREENING, and published by the Agricultural and Horticultural Association, Agr Street, W.C.

"GARDENING FOR ALL."—This handbook, by JAMES UDALL, with an introduction by the Right Hon. Viscount CONHAM, is issued as a Worcestershire Technical Instruction Committee Manual. Its pages are devoted to the consideration of soils, crops, and small collections of flowers, fruit, and vegetables; and the reliability of the information given is quite to be depended upon. It is true that there are now-a-days many books upon gardens and gardening, but it is also true that the reading and gardening public is ever increasing. To meet their requirements, here

is yet one more book which, for clearness of style and plainness of the illustrations, may be commended to their notice.

POTATO EDUARD LEFORT.—The well-known firm of MM. H. VILMORIN, ANDRIEUX & Co., are distributing a variety of Potato which deserves attention from the gardening world, not only for its high cultural value, but also as being the product of grafting the variety *Imperator* on the early *Ashleaf* (Marjolijn of the French). This is certainly the first instance of a hybrid having been obtained in this manner, which combines the peculiar good properties of the stock and the scion. The tubers are of middle size, round in shape, and keep in good condition for a considerable period. The flesh is yellow, firm, meaty when cooked, and of good flavour. It is an early ripening very prolific Potato, with but little haulm. The raiser is M. LEFORT, of Strawberry fame. *Wiener Garten Zeitung.*

THE APPLE-BLOSSOM WEEVIL.—Mr. F. V. THEOBALD has placed fruit-growers under an obligation by printing, in a concise form, the account of the appearance and manners and customs of the destructive insect known as *Anthonomus pomorum*. The pamphlet may be had on application to Mr. THEOBALD, at the Agricultural College, Wye, Kent. The application of kerosene emulsion before the flower-buds open is recommended, and it certainly has an advantage over very poisonous substances, such as London-purple or Paris-green. Mr. THEOBALD calls attention, nevertheless, to a new insecticide in the form of arsenate of lead, the mode of preparation of which is detailed in the pamphlet before us. The cost is not greater than 4*d.* per 100 gallons, and we are told that it is "most successful in regard to leaf and bud-eating larvae, and is well worth a trial by all fruit-growers."

ALTERNATIONS OF GENERATION.—We alluded to this subject in our last issue, and had we received it in time we should have mentioned a paper of M. HENRIK HESSELMAN on the "Formation of Floral Leaves from the Scales of Bulbils in *Lilium bulbiferum*;" in other words, transitional forms between the scales of the bulbils and the parts of the flowers. The paper is in Swedish, but there is a summary in German.

LORD ROSEBERY POTATO.—Several of our northern correspondents have kindly furnished us with information concerning the origin of Lord Rosebery Potato. It is stated to be a seedling from Grampian—a much-esteemed Scotch variety, and it is one of the finest round oblonged Potatoes grown. Messrs. G. BRUCE & Co., Aberdeen, catalogue it.

COMING EXHIBITIONS.—Schedules have been received from the following Societies:—

ROYAL BOTANICAL AND HORTICULTURAL OF MANCHESTER, for exhibitions to be held on the following dates:—June 4 to 10, and July 10. The first of these is the usual Whitstable fixture, for which there are forty-one classes. Most of the flowering and foliage plants in season at that time are scheduled. The exhibition on July 10 will be one of Roses, and in conjunction with this a cottagers' competition will take place.

THE BATH FORMAL FETE AND BAND COMMITTEE have arranged for a Rose and Begonia show on Thursday, July 8; and a general exhibition of horticultural produce on September 1 and 2. Efforts have been made to make each of these a success.

LEEDS FLOWER SHOW AND GALL.—This event is to take place in the Tealingley Athletic Grounds on Wednesday, July 7, and two following days. The schedule includes seventy-two classes of varied and comprehensive character; Orchids and groups of miscellaneous plants are specially encouraged.

WEST OF ENGLAND CHRYSANTHEMUM.—The annual exhibition is to be held in the Guildhall, Plymouth, on Tuesday, November 2, and following day. The schedule includes classes for fruits and vegetables, and, in addition, many special prizes are offered for similar produce. The *Chrysanthemum*, however, will create three-fourths of the show.

THE FEATHER-WEIGHT BOUQUET.—We remark in a pictorial list of floral designs, issued by Messrs. B. S. WILLIAMS & SON of Holloway and Piccadilly, a novel kind of bouquet, consisting of long sprays of Asparagus, to which slender, pendent sprays of flowers are attached. Providing the flowers are of a suitable kind, a bouquet of this sort has an elegant appearance; and, being but a few ounces in weight, it imposes no arduous efforts on the part of the lady to keep it in her hand.

APPLES FROM THE ANTIPODES.—When in February last we noticed the arrangements for the supply of Tasmanian Apples to this market, the limit was in the vicinity of 100,000 boxes—that limit has been exceeded already, and to-day we have the following from the officials of the P. & O. S. Co.:—By the Orient Co.'s steamer *Ophir*, 16,000 boxes; by the P. & O. Co.'s steamer *Ballarad*, due about June 2, 25,000 boxes; and by the Orient Co.'s steamer *Ortava*, 5300 boxes.

ROYAL BOTANIC SOCIETY.—Owing to the late cold weather having kept back the flowers, the show of the National Tulip Society, which had been announced to take place in the Gardens on May 5 and 6, has been postponed to the 12th and 13th.

PUBLICATIONS RECEIVED.—*The Canadian Horticulturist* (published by the Ontario Fruit Growers' Association, Grimsby, Ontario), April.—*Favourite Flowers of Garden and Greenhouse*, vol. iii., No. 34.—U.S. Department of Agriculture, Division of Entomology, *Some Little-known Insects Affecting Stored Vegetable Products*, by F. H. CHITTENDEN. Among the contents of this useful *Bulletin* are articles on:—“The Dried Currant-moth (*Ephestia cahrirtella*),” “The Chocolate-moth (*E. elutella*),” “Notes on Grain-beetles of the Genus *Silvanus*,” “Gnawing and other Habits of Certain Dermestidae,” “Weevils that Affect the Seed of the Cow-pea,” “Development of the Common Bean-weevil,” “A Little-known Grain-weevil (*Caenophilus latinus*),” “On the Occurrence of the Grain-moth,” “Invasion of the Coffee-bean Weevil,” “Parasites on Flower and Meal-moths,” and “A Foreign Parasite of the Grain-weevils.”

PLANT PORTRAITS.

- ESCRYNAVANTUS SPECIOSUS*, *Garden*, March 13.
ALLIUMADA NOBILIS, Moore, *in Gard. Chron.*, 1894 p. 139; *Revue Horticole*, February 15.
ASPENUM PHILIP-ROBINIA, *Mechan's Monthly*, February.
CASSIA OCCIDENTALIS, *Revue Horticole*, April 1.
CATLEYA X GRESLII (bicolor), *guttata* ?), *Garden Flora*, t. 1436.
CATLEYA LABIATA, *Garden*, February 27.
CATLEYA WARRENII, *Orchid Album*, t. 521.
CRINUM MOOREI ROBUSTUM, *Revue de l'Horticulture Belge*, March.
CYCNEROS CILICHOCHLOS, *Garden*, March 6.
CYCLAMEN BUSH HILL PIONEER.—The crested variety, introduced by Messrs. H. Low & Co., *Revue de l'Horticulture Belge*, April.
CYMBIDIUM TIGRINUM, *Parish, Orchid Album*, t. 523.
CYPRIPEDIUM X GRIEKENHAINUM. A hybrid between *C. bellatulum* and *C. Grienhainii*, the latter itself a hybrid between *C. Hookeri* and *C. Lawrenceanum*.
CYPRIPEDIUM X MORGANE VAR. BERFORDENSIS, *Lindavia*, t. 2XLI.
DESBORBIUM SCHROEDERIANUM, *Revue de l'Horticulture Belge*, April.
DESBORBIUM TRANSPARENS ALBUM, *Orchid Album*, t. 522.
DIPLODENDRA SANDERII, *Garden*, March 27.
FRITILLARIA IMPERIALIS RUBRA MAXIMA, *Floriologisch Huverensche*, t. 3.
HYACINTH. GIGANTEA.—Single light pink; one of the best for general purposes. Its origin is not known. *Floriologisch Huverensche*, t. 7.
JACARANDA MIMOSEFOLIA, *Revue Horticole*, March 16.
LILIUM ELIAGANS CITEFINUM, *Le Moniteur d'Horticulture Paris*, March 10.
LILIUM ELIAGANS VENUSTUM MACRANTHEUM [We are not answerable for the name!], *Le Moniteur d'Horticulture Paris*, March 10.
LILIUM WALLACEI, *Garden*, January 30.
ODONTOGLOSSUM GRANDE, *Garden*, February 13.
ODONTOGLOSSUM MACULATUM, *Llave and LENZANA*, *Lindavia*, t. XLIII.
OSTROBRIA SERRELLATA, *Mechan's Monthly*, March.
OSCIDIA LURIDUM, *Lindley, Lindavia*, t. 2XLI.
PEAR IDAHO, *Bulletin d'Arboriculture*, &c., March.
PHLOX DEUSSATA, *Paul Krüger, Tijdschrift voor Tuinbouw*, t. 4; foliage variegated, flowers red.
PURONIA VETROGALLUM, *Garden*, April 3.

PLUM, THE CZAR.—One of Mr. Rivers' seedlings, remarkable for its earliness, prolific habit, and good flavour. *Bulletin d'Arboriculture*, February.

FRONCINETTES KUNTZEI, K. Schumann, in *Monatsschrift für Kaktus- und Sukkulentenzucht*, t. 5.

ROMNEYA COULTERI, *Tijdschrift voor Tuinbouw*, t. 5.

ROSA MULTIFLORA-1, Agnina; 2, *Euphrosyne*; 3, *Thalia*.—*Rosen Zeitung*, February.

TYLANTHA BURGESSII, *Garden and Forest*, February 3.

TULIPS, SINGLE VARIETIES.—1, *Chrysolata*; 2, *Canary-bird*; 3, *Wouvermann*, dull purple; 4, *Immaculate*. All well named and approved varieties. *Floriologisch Huverensche*, t. 8.

URCEOLINA MINIATA = PENTLANDIA CARNEA, Hort., *Revue de l'Horticulture Belge*, March.

CYPRIPEDIUM LAWRENCEANUM.

CYPRIPEDIUM Lawrenceanum is usually “stemless”—that is, the stem is very short, but occasionally the stem is developed, and the result is, that the leaves are closely packed in two rows, as shown in our illustration (fig. 99, p. 291), taken from a specimen sent us by Messrs. Hugh Low & Co. In this plant there were as many as four growths (A, B, C, D), the latter bearing the flower-stalk.

HOME CORRESPONDENCE.

STRAWBERRIES AS BIENNIALS.—I noticed recently at Dropmore that Royal Sovereign, treated as above on a warm border, was, on April 15, throwing up strong trusses of bloom from plants put out early last autumn. They had not been specially layered, but were lifted from the bed and planted out as soon as the border could be prepared after early Peas had been removed. Not only were the bloom trusses strong, but the foliage was strong also. Noble was good treated in the same way, but the other variety was stronger and more promising. The plants are put out 12 inches apart each way, and, of course, a rod of ground taking some 250 plants, carries not only a great quantity of fruit, but very fine fruit also. The entire border is yearly equally divided between early Peas and Strawberries, the cropping being alternated with the very best results. A. D.

APPLE, BRAMLEY'S SEEDLING, appears to vary considerably in its fruiting properties, and a tree occasionally bears a perpetual crop. For many years a large tree at this place failed to fruit till I removed it to a somewhat shady corner, when it grew away rapidly, and now produces heavy crops regularly. The fruit does not keep after Christmas. Young trees on the Paradise stock fruited at four and five years' old. It appears to be a fine cooker, but very sour. The two best Apples at present are Royal George, a variety with very distinct growth. It is described as follows in McIntosh's *Practical Gardener*, fruit large, oval, yellow and green, flesh firm and sugary, beautiful fruit, keeps well, is in eating from January till June. Tree handsome and a great bearer. We have exhausted the supply of this variety to-day, and are now depending on the best Apple we grow here, which is Newton Wonder. This is a very fine Apple, and is useful for eating as for baking, though it grows to a size too large for dessert, its flavour and fine appearance are appreciated. G. Bolas, *Haydon Hall Gardens, Wirsborough, Dorsetshire*.

This variety is not in high favour at Dropmore, because in bush form it is not so fruitful as are many other equally good and useful varieties. No doubt the variety is best at home planted in orchards, where it can grow strong for several years, until its immense energy being somewhat exhausted, it commences to bear, and then becomes a very profitable variety. For bush culture Lane's Prince Albert and Wellington seem to be of the best for producing late, long-keeping fruit, and after all it is doubtful whether there exists of late varieties any two others that excel these for home uses or for market sale. Whilst at Dropmore, many of the best varieties show already great prospective productiveness, the few gross growers show that they would be better on free stocks in thin orchards. A. D.

—Both this Apple and Lane's Prince Albert have elicited much attention in East Anglia and other parts of England and Scotland, when exhibited at the Technical Instruction Lectures. They are of good size, high colour, and good quality. Should Mr. Merryweather have one or two to spare, I should be

glad if he would send two or three of each to 12, Fettes Row, Edinburgh, when I would duly and truly report upon them. Apropos of Apples, I had a curious case of an almost entire absence of colour in a fine sample of a Bismarck at one of my recent Lectures on Technical Education. Whereas the last I had previously exhibited, a *fac simile* of which was painted by my wife at the time, was more fully coloured than a Blenheim Orange. And yet the almost colourless Bismarck hailed from Herefordshire. D. T. Fish.

TRANSPLANTING BRACKEN.—Some years ago I had a large quantity of this Fern sent up from Haats to mix with rock-work in decorating a bank. The hard sand in which Bracken and Ling had been growing, admitted of blocks being cut of about a foot square and 8 inches thick. These were loaded into carts and railway-trucks with facility, and were easy to handle in forming the bank. It was interesting to find that in time Brambles, Scotch Fir, Beech, Birch, and Oak, as well as the Ling and Bracken, appeared, and made themselves at home, and the rock-work bank was soon clothed with verdure of a varied and pleasing wildness. Your distinguished correspondent, Mr. D. T. Fish, pp. 277, 278, recommends masses of Bracken and soil a yard square, and by implication a foot or more thick. The weight of these would be about 5 cwt. each! On a large scale, the best implement for breaking up Bracken is a strong plough, as long pieces full of surface-rhizomes can thus be obtained. I agree with Mr. Gohring, (p. 280), that the best time to transplant Ferns is when they begin to grow in the spring. W. Roupell, *Strathairn Hill*.

COMMEMORATION PROPOSAL FOR A ROSE-DAY.—I saw in some paper lately a list of all the proposals which had been made to commemorate the Queen's Diamond Jubilee. They ran up into the hundreds, and were full of fun, fancy and folly, though the fun was usually unconscious. Notwithstanding the portentous number of suggestions, I am going to make another. It is a simple and sentimental proposal for the decoration of our persons on June 22. I think the British floral emblem, the Rose, should be worn by everybody on the Celebration Day. The Rose-rop will be in all its glory at the end of June, and no one need be without one who has a penny to spend. I further suggest that here, from June 22, shall be always known as “Rose Day,” in honour of England and good Queen Victoria. (N.B. All pirates of this idea are hereby warned that it is the sole property of “Alter Ego.” Yes! I think “Rose Day” ought to come. As the Post Laureate says in his best prose work, *The Garden that I Love* (p. 96):—“The Rose is the typical flower from its representative personality. Withal, in most gardens, the Rose enjoys but a brief reign, much briefer than that of many another flower, but so long as it blooms in profusion, it throws into the shade all other pretenders.” Just so, “Rose Day” would throw all other celebration days into the shade. The Rose is a Royal flower, and should be used on such a truly royal and national occasion this year, and for all time. *Alter Ego*, in “*Church Family Newspaper*.”

VOLES AND MICE.—When you kindly opened your columns to us on this subject, our main object in writing was to ascertain if any other nurserymen or growers in quantity of young trees had had their stocks damaged by voles this season similar to ours, and gaining this point meant the matter to drop. But really Mr. Simpson, in your issue of April 24, has distorted our remarks on the subject to such an extent that we cannot refrain from replying. First, we never said voles and mice were not a distinct species, only that they were generally described as “field mice”; also that voles could climb and get at Scots Fir buds. Second, the 4-foot Scots mentioned in our initial article were words from Mr. Dunn of Dalkeith's letter, as having occurred in his experience many years ago, and not our words. We simply stated in our second article, that stiff-growing two-year transplanted Scots Fir about 15 inches high growing in nursery rows, such as ours were, was no obstacle for the voles to get up, and this we still maintain whether Mr. Simpson doubts it or not. *Loving and Mother*.

VIOLETS.—Noting your capital article in the *Gard. Chron.* of April 17, and the characteristic sketches of Violets, allow me to mention that Princess of Wales (Princesse des Galles of the Continent) is far and away the finest variety. The Violets do not succeed

in our town, owing to the smoke, and we therefore cultivate them in the country, where we find California to be of no value, being weakly in growth, and sparse in flower; while Princess of Wales is glorious in September, and flowers again freely in April; and possibly in warmer districts it would blossom all the winter. In autumn its flower-stalks approach 1 foot in length, and the foliage is like a Col's-foot-leaf for size. Unless the newer kinds improve under culture, they will not be of much service. With *Lee's Victoria Regina* and *Welliana* for winter blossom, *Lee's Odoratissima* for a fine bloom, and the Princess, we can make sure of a constant supply of blossoms, except during periods of frost and snow. *George Bunyard, Maidstone.*

As a large grower of Violets for many years, and a lecturer in the Royal Botanic Gardens, Edinburgh, on April 9, on "Sweet Violets," and in *Pleasure and Profit*, I was specially interested in your very instructive article in the *Gardeners' Chronicle* on the 17th. Perhaps, under the circumstances, you will permit me to direct attention to a few of the, of course, wholly accidental coincidences and contrasts between the article and the lecture, as well as to express a practical opinion of the value of some of the best varieties, new and old. Leaving out the plant of the newest *Viola odorata sulfurea*, and the enlarged addition of Princess of Wales, seven varieties were illustrated on pp. 248 and 249 of the *Gardeners' Chronicle* for April 17; seven was also the number of the plants, and of bunchlets of bloom, with which the kindness of a most successful East Anglian Violet-grower enabled me to illustrate my lecture with fragrant and beautiful object-lessons. But while your illustrations were all single, five out of the seven object-lessons at the lecture were double. Another contrast—your illustrations were mostly and necessarily new; those at the lecture were chiefly old. The double varieties at the latter were *Marie Louise*, *Comte de Brazza*, *De Parme*, *Double Victoria Regina*, and *Neapolitana*. The two singles were *Welliana* and *Russian*. I also noted in Professor Balfour's private garden a fine mass of the all-too-rare single *Neapolitan Violet*, one of the sweetest and most chaste of them all. At the close of the lecture in the Botanic Gardens on the 9th, the first question asked was one concerning the character and conduct of cleistogamous Violets. The subject may be said to form the two first and more important paragraphs in the *Gardeners' Chronicle*. It came to the lecturer in quite a different form. Thus: "Pray, sir, can you tell me how it is that a bed of *Neapolitan Violets* in my garden has not bloomed for seven years, though it seeds plentifully every year?" The latter clause revealing the presence and potency of cleistogamous flowers, if a Violet with little colour and less fragrance, that hugs the ground under the leaves, instead of rising modestly into the air and saturating its environments with fragrance, deserves the name of flower. The answer as to cure of barrenness was, more light, less shade, moderate feeding, and annual division into single crowns or stably single runners. Can it be possible that the theories you lay down, viz., that cross-fertilisation secures variation, and that close fertilisation ensures stability of character and absence of variation, explain the stability of the *Neapolitan Violet*. Possibly there are few Violet growers that have not been puzzled with these curious abortions, which are specially prevalent among *Neapolitan Violets*, which is probably the oldest of all existing varieties. Another curious point in relation to these unformed spoilt Violets is that they are seldom or never seen among the thousands and tens of thousands of Violets, grown afresh from four to roundish, pointed runners, every year, and blooming at distances of from 9 inches to 1 foot asunder, kept clear of runners and of weeds, and fully exposed to the light. Special care should be exercised in selecting runners of *Neapolitan Violets*, avoiding not only cleistogamous plants, but all with sharp, narrow-pointed runners; and by careful selection in broad, mechanical lines, strains may be vastly improved, and the produce and size of flowers doubled or more. No doubt the original form of the *Neapolitan* was single. In colour, this and the double have not varied. The history of the so-called white *Neapolitan* is of doubtful authenticity. As to the best varieties, permit me to make a note or two on a few of the new ones, as well as the old sorts of Violets. As to the *odorata sulfurea*, its colour will almost certainly prevent its popularity. Just as surely as a Rose by any other name would not smell as sweet, so neither will a Violet of any other colour than blue or purple. Hence single and double red have made but scant progress, and even white has never

come up to purple in popularity or profit. Hence this dull sulphur-coloured Violet, unless very liberally filled with fragrances of which nothing is said, is not likely to win its way to fame or fortune. The Princess of Wales is almost too large, of good colour, sweet odour, but had form for a sweet Violet. In fact, as the natural flowers and your illustration proves, the flowers are those of a "Violet," and not of a "Violet." And notwithstanding its substantial merit, and its name appealing to our loyalty in this Diamond Jubilee Year, the size and especially the form of this Violet will probably swamp or fetter its popularity. California may be described as a monster Czar, with giant-like leaves, leaf-stalks from 9 inches to a foot in length; I have met with it in various places, and not once very profusely flowered. It seems almost too vigorous for a Violet, especially when we hear in advance that though it is unquestionably hardy, it is unquestionably better for protection. Of other singles *Welliana*, which has often been described correctly as an improvement on *Victoria Regina*, and *odoratissima*, *Devoniana*, *Victoria*, single *Russian*, and *London*, should find a home in every garden. For double



FIG. 99.—*CYPRIPEDILUM LAWRENCEANUM*.
(SEE P. 290.)

Violets the following are pre-eminent, *Marie Louise*, *Comte Brazza*, almost the only white Violet really worth growing; *De Parme*, *Neapolitan*, *Victoria Regina*, *Mlle. Bertha*, *Barrou's* *syn. Victoria*, fully scented, beautiful indigo blue; *King and Queen of Violets*, fine and striking for growing out of doors. Finally, will any practical Violet grower kindly define the difference in the following Violets, *De Parme* and *Lady Hume Campbell*, *Marie Louise* and *New York*, and *Venice*? Also kindly name a better all-round Violet in the open or under glass than *Marie Louise*; also name with tolerable certainty the double-flowering or perpetual single Violet of certain parts of England and Ireland, and what relation these have to the Violets *De quatre Saisons* of the environs of Paris. *D. T. Fish.*

LILIUM THOMPSONIANUM, ETC.—After reading my friend Canon Ellacombe's note in the *Gardeners' Chronicle*, p. 277, I think that it may be of interest to state that a plant of *Lilium Thompsonianum* in good bloom, sent to me by Mr. Leitchlin, was shown before the Floral Committee many years ago. Mr. Leitchlin then told me the secret of flowering it was the taking off the numerous small bulbs which it forms, and which weaken the plant. Acting on this hint I bloomed this Lily well in an orchard-house, and once out-of-doors. I quite agree with Mr. Elwes at p. 256, that trade considerations weigh too much

with the majority of the Floral Committee, and that plants which would be of the greatest interest to many of the amateur visitors to the Drill Hall are passed over in favour of those likely to have a large and ready sale. The late frosts have hurt flowers much; we had fine clumps of *Epigaea repens* and *Shortia salicifolia* covered with bloom, but one night's frost browned almost all the flowers, and I fear many *Plums* and *Pears* have been touched. *George F. Wilson, Wehrbridge.*

A plant of this species blossomed here about three or four years ago. It had for a very long time been cumbering the ground, and I thought of throwing it away as being altogether useless to me. Instead, however, of adopting this rash expedient, I picked out for it what I considered was the worst place in this garden, and I planted it in some very rough soil under an old Fig-tree. There it is now, but it has never blossomed again. I thought the move was responsible for its better behaviour, but it may have been only a question of age, as Canon Ellacombe says. *H. Ewbank, St. John's, Eyre, Isle of Scotland.*

DAPHNE MEZEUREUM.—The writer of the article, "Trees and Shrubs," in the *Gardeners' Chronicle* of April 3, in his comments on the habits of the two species of *Daphne*, *Mezeureum* and *Laurus*, mentions that the former does not propagate itself in his district by seed, while the latter does. It might be interesting to him, as well as others, to know that the *Mezeureum* in the garden here multiplies readily by seed, so much so, that whenever a plant is wanted, one has nothing to do but to go into the shrubberies or woods around and choose one. Its seed is most likely disseminated by birds, probably blackbirds and thrushes in particular, which devour the berries and void the seeds, thus effecting the distribution of the plant. *J. Parkin, Blithwaite, Carlisle.*

CAMELLIAS.—On p. 249 "A. D." remarks that these beautiful shrubs might be grown in the open, south of London, if provided with suitable soil. For the last thirty or forty years a grand plant of *Camellia Sasanqua* has been growing in the open near here. Hard weather does not affect it, excepting the sharp frost of a few years back, which followed after mild weather, and while the plant was aglow with flowers; and even then, only those that were exposed got spoiled. The plant is about 12 feet high, and 6 feet in diameter. All through the period from the beginning of February to early in March, it has been a delightful feature this year. Its flowers appear from four to six weeks before the *Cydonia japonica*, according to the season. Other varieties of the *Camellia*, especially *Duchess of Northumberland*, have been grown in the open upon the same border, but none proved so entirely satisfactory as *C. Sasanqua*. *Laurels*, *Laurustinus*, *Bays*, and many reputedly hardy subjects have been much injured by frost, but the *Camellia* was unharmed. The plant faces due south, and yet the sun has no injurious effect upon it. No fresh soil or manure of any kind has been afforded it, so far as I can remember. *A. P.*

FROM THE EMERALD ISLE.—We have not had such a cold, wet, and sunless spring in Ireland for the last forty years, according to our best local meteorologists—and then a hot and fertile summer followed it. I hope the same may be the case this year, as warm and dry late summer and autumn being most desirable in this country. At Newry the spring flowers are very fine, and there is a great show of fruit tree blossom everywhere. Smith has a very fine lot of early Dutch Tulips now in bloom, mostly home-grown. It is curious to notice that the home-grown Tulips (Dutch variety) are seven days earlier, and one-third taller than are those of some varieties as imported direct from Holland last autumn and grown side by side with those grown here for two or three years. *F. W. B.*

ABIES BRACTEATA.—The measurement of the tree here at 3 feet from the ground is 3 feet 2 inches; spread of lowest branches, 32 feet; but I can see no signs of any female cones, although I have examined the tree with a glass. It is now eight years since it bore female cones, and we quite expected it to show some this spring after the hot summer. *Frank Harris.*

TREES IN HEDGEROWS.—Your recent leader has struck a note that has been frequently sounded, and so far as I have observed, there has been no discussion on the subject that has had any material effect. I refer to the planting of trees in hedgerows. There is undoubtedly much to be said in favour of the practice, when the dreary highway, with its unbroken stretch of hedgerows, is being traversed under the influence of July sunshine, at which time the shade

of a tree would be most welcome, and when the artistic effect also is considered, another strong vote is recorded in its favour. The economic aspect has also been advanced to further the object in the planting of fruit trees of such varieties that would be likely to succeed in those positions. The latter practice, we are informed, succeeds admirably in certain continental countries, benefiting the district to a considerable extent. Where the hedgerows are under the supervision of the County Council, such plantations would be of great advantage, as examples for their instructor to demonstrate upon, as the position they occupy would be such that even those who run, or rode either, could read. But he would be a bold landlord who would attempt the experiment on an average British hedge. When an occasional plant of Holly in a hedge is cut to a skeleton some weeks before Christmas, it is very doubtful whether an Apple or Plum would be permitted by "travellers" to perfect its fruit for the benefit of its rightful owner. I do not mean to infer from this that the majority of roasters take to which belongeth not to them, but those of us who have schoolboy recollections remember the Eden temptation there is in an Apple within reach of a stone's throw, whatever the variety may be. But I think the practical aspect of the case would be its strongest condemnation. Undoubtedly the chief object of a hedge is to fence off the property it encloses. Now, the more perfect the hedge, the better it fulfils that object. When trees are planted at intervals along the hedgerow, the growth underneath those trees is invariably weak and flimsy—the very opposite of what it should be. Holly is considered by authorities from the time of Evelyn until now to be the best subject to plant under the shade of trees—and undoubtedly it is; but I have never yet noticed it in such a condition that it could be termed a perfect fence. Cattle and horses quickly find out the weak places, and it is needless to dwell on the depredations they make in a very short space of time, besides the many other inconveniences that ensue from a gap in the fence. Nor is this the only drawback to the practice, for even the most casual observer must have noticed in passing how greatly the land is robbed of the nourishment which should be utilised by the crops for a considerable radius from the tree. Elms have a notorious reputation in this respect, a striking instance of which was observed in a field of Potatoes last season not far from here. The field throughout had been well manured and cultivated, producing outside the radius referred to a very good crop, but within this space the crop did not pay for the labour of lifting it, a result which had been finely predicted by many who saw the feeble growth that made during the season. The writer knows well a good example of fruit-tree planting in hedgerows. The hedge divides two fields, and is a considerable distance from the highway, so that the trees have escaped the mutilage so noticeable in fruit-trees growing close to the road-side. In many places, underneath the trees the fence exists only in name, and wherever the umbrellas of branches is spread, there is no live hedge that could honestly be called a fence. The fruit they produce is, as might be expected from the position they occupy, very inferior, possessing no marketable value, and therefore only to be made into cider. The commercial value of this commodity cannot be very great, as I have noticed in seasons when the Apple crop has been plentiful, that a considerable quantity of fruit is left to rot on the ground, or to be eaten up by the stock grazing around. A combination of fence and fruit is, in my opinion, a very doubtful arrangement, and I cannot agree with the idea of spoiling a good hedge for the satisfaction of producing inferior fruit. *J. MacDonal, Clanna.*

SOLANDRA GRANDIFLORA.—The figure of *Solandra grandiflora* in your last issue is very perfect, and shows a feature in the margin of the flower, part being filled and the other plain. It may be of interest to some of your readers to know how it has been grown and flowered here. We never allow late stoking to result in high night temperatures. The fires are made up before all hands leave the garden at half-past five, and earlier on Saturdays and Sundays. I attribute our success in flowering this and other common plants partly to this practice. On Vines we have been so treated for many years. *Solandra grandiflora* is grown in an 8½-inch pot, 9 inches deep. It is a bush, 3 feet high, the longest branch being 4 feet long. It is potted in fibrous sandy loam, and stands over a shallow tank of water built over the flue. It is allowed to rot through the bottom of the pot into the water when

making growth or flowering. After flowering, short-jointed growth is made, and then it is gradually allowed to get dry till every leaf falls and the plant slightly shrivels. It is then shaken out and repotted, and put into brisk heat. The buds soon form, growing slowly, but developing largely, till we are rewarded with a most delicate perfume as the flowers slowly expand. The plant has a vigorous healthy appearance. I am hoping to flower it twice in the year, as we had *Clerodendron Balfourianum*. I have treated *Allamandas* also as bushes, using only one stick. I have seedling *Allamandas* that flower in this way, without any support, but they are of no value, being small, but very floriferous. *George Bolas, Hopton Hall Gardens, Derbyshire.*

SOCIETIES.

THE ROYAL HORTICULTURAL.

April 27.—An ordinary fortnightly meeting of the various committees was held on Tuesday last in the Drill Hall, James Street, Westminster. In bulk, the exhibits were considerably less than on the previous occasion, and may be described as average in extent rather than extraordinary, like several of the exhibitions held during the present spring. The principal features in the display were Orchids and Roses, there being fine collections of each. Of the latter, there were plants in pots, and numerous out blooms. A few Awards were again shown, and what we may expect to be the last flowers of Narcissus during the present season. As will be seen below, several collections of these were quite noteworthy. A few awards were made to plants of interest, but these were not numerous.

Floral Committee.

Present: W. Marshall, Esq. (Chairman), and Messrs C. T. Druery, H. B. May, H. Herbst, R. Dean, G. Scott, Stevens, J. S. Hudson, John Jennings, J. F. McLeod, R. B. Lowe, H. S. Leonard, Chas. Jeffries, J. W. Barr, Chas. E. Shea, J. B. Clarke, D. B. Crane, H. J. Jones, H. J. Guthrie, Chas. Dick, R. Turner, Geo. Paul, T. W. Saunders, Owen Thomas, and Thomas Poole.

A collection of hardy plants, from Mr. TROUS, S. WAVE, Hill Nurseries, Hitchin, included several species of *Primula*, notably, varieties of P. Sieboldi, also P. involucrata, &c.; *Gentiana scabra*, *Trillium erectum*, with dull crimson flowers; several species of *Saxifraga*, *Lilium Drowni*, *Cypripedium pubescens*, *Anemone fulgens* (an exceptionally bright-coloured variety), *Narcissus Bulboodum*, &c.

A few blossoms of *Tulipa Greigi*, from Messrs. R. WALLACE & CO., Kilfield Gardens, Colchester, were exceedingly bright.

A group of Ferns and ornamental Coleus was shown by Mr. H. B. MAY, Dymon's Lane Nurseries, Upper Edmonton. The varieties Golden Gem, Crimson Gem, Mrs. Evans (scarlet leaf edged with gold), Mrs. Dickinson, Glorious, and others were very pretty, and each was represented by three well-grown plants of moderate size (Bronze Banksian Medal).

A bunch of excellent flowers of the Princess May variety of *Malmesbury Carnation* was shown by Mr. C. TURNER, Royal Nurseries, Slough (Bronze Flora Medal); also a plant of *Richardia Elliottiana*, with a richly-coloured double spathe. An Award of Merit was recommended to *Nasturtium* Mrs. Sanderson, shown by Mrs. SANDERSON, The Mount, Edling; about a dozen plants were exhibited, the habit being quite dwarf, and producing numerous erect flowers of rich intense crimson.

Messrs. W. CROSSLEY & SONS, Highgate Nurseries, London, N.W., had an excellent exhibit of varieties of *Azalea mollis*, including *A. m. x. stierisii*. The plants were interspersed with a few decorative species, and a fine effect was produced (Bronze Flora Medal).

A group of miscellaneous plants from Messrs. JNO. PEEN & SONS, Ropell Park Nurseries, Norwood Road, S.E., contained some *Oleas*, *Asias*, *Azaleas*, *Palms*, &c. (Silver Banksian Medal).

Another group of miscellaneous stove and greenhouse plants was one from Messrs. J. LAINO & SONS, Forest Hill, London, S.E. It contained many excellent decorative species of fine condition. They also exhibited some plants of *Streptocarpus multiflorus* perfect, a strain producing showy white flowers with purple-violet marks in throat. A pretty *Gloxinia* named *Lady Elridge* may be mentioned also (Silver Banksian Medal).

There were three large plants in flower of *Arctotis arvola* from J. T. BENSLEY, Pot, Esq., Holmwood, Chesham (Mr. Downes). They also exhibited some plants of *Roses* were again shown in considerable quantity by Mr. GEO. MOUNT, Canterbury, and the varieties Catherine Mermet, General Jacqueminot, and The Bride, were represented in particularly fine manner. Many other varieties in less numbers were capitally shown, including a few with long

stems possessing bright healthy foliage (Silver gilt Flora Medal).

Mr. W. DREWRY, Joyning's Nursery, Waltham Cross, London, N., made a good display of *Rose* blooms, and also of plants by pots. Of the latter, there were numerous varieties represented by small plants, and there were several large boxes filled with blooms of diverse varieties (Silver Banksian Medal).

Mr. FRANK GAY of the Braidwick Nurseries, Colchester, made a group of *Roses* in pots upon the floor near the entrance door. The plants were young and dwarf, in capital health, and possessed of good foliage. The varieties included were fairly numerous. The following were conspicuous amongst them:—Caldwin Christy, Marie Baumann, Camille Bernardin, Shirley Hibberd (a pretty little *Rose*, Mrs. Harkness, Mrs. E. G. Sharma Crawford, Chas. LeFebvre. Varieties of the *Polyantha* type skirted the group (Silver Flora Medal).

Messrs. PAUL & SON, Cheshunt, showed a group of *Roses* in pots, a few meritorious *Hippocratus*, and several species of hardy plants in flower. Also a plant of *Moraea pendula*, or a weeping variety of the White Mulberry. This latter was recommended an Award of Merit, and a Silver Flora Medal was awarded to the group.

The genus *Primula* was represented by a collection of *Alpine Auriculas* and varieties of P. Sieboldi, from Mr. CHAS. TURNER, Slough, among the former being some newer sorts raised at Slough. The gold centre is easy to get in the *Alpine Auricula*, and the nearer it approaches a deep bright gold, the greater is the contrast with the marginal colours. A few of the leading varieties were Fred Knighton, of which group it is the best, showing a very strong stem, bearing an unusually large truss of bloom; the ground-colour maroon, shading to deep lilac-rose; the pip flat, and circular, and a fine exhibition variety, though a little late in blooming. A plant of this variety was submitted to the Floral Committee by Mr. R. DEAN, Edling, and an Award of Merit was recommended. Others of the golden-centred section were:—*Silvia*, broad maroon ground, with slight shading of crimson; John Boswick, having a maroon ground, broadly shaded with bright crimson; Mr. Watts, in the same way, but the yellow-centred deeper—this is a fine variety, having a symmetrical, flat, smooth pip; Joseph Adams, with a centre of bright yellow, shading to ochraceous of the corolla, shading to rose-salmon—a variety of considerable refinement; Comet, bright gold, slight dark ground, with broad edging of rose-salmon; W. L. Walker, pale gold, the maroon ground shading to very lilac—a large flat pip of high quality; Albany, having a yellow edge, with a rose margin of rose-salmon; and Adventure, having a dark ground extending nearly to the edge, with a slight white shading of lilac.

The white centre is much more difficult of attainment, as so very few varieties open white, and then maintain it bright and clear. Some of those which quite fully do so, of bright appearance, while the marginal colours are bright and effective. Others open pale yellow in the centre, and bleach to white; but in the case of such a variety, the truss has a confused appearance, as pips have different tinted centres, according to their development. The present and most living white centres are generally associated with lilac, violet, mauve, or purple in the marginal colours, though the white centre is sometimes found in combination with a crimson shaded margin. Three of the best of the newer white-centred *Auriculas* are to be found in *Wimifred*, Mrs. Harry Turner, and Countess, all having dark ground colours, shading to pinkish white in the centre. Others are *Dora*, with dark blotches shading to pink, and deepening to rose-lilac, fine pip; Countess of Stamford, black ground shading to deep rose-crimson; Duchess, cream centre paling to white, dark ground shading to lilac; and Pantaloon, a charming variety, black ground, distinctly lined with lilac rose. Mr. R. DEAN had a white-centred flower named J. W. Wilkinson, the lilac shading on the margin being much reticulated.

Mr. TURNER had several plants of P. Sieboldi in the variety, each pan being filled with small plants in pots. The darkest was *Victor*, bright mauve, and the lightest was *White*, in the name Ruby Gem; Harry and Arthur, pale soft rose; Polly and Mrs. Crossland, of soft siller tints; Mrs. Ryder and Fairy Queen, bluish; *Alba grandiflora* and *Queen of Whites*, the best whites. Beautiful and easily grown as are the varieties of P. Sieboldi, yet they do not appear to take the public fancy so much as their deserv. (Silver Flora Medal).

Messrs. JAS. YERRUC & SONS, Royal Exotic Nursery, Chelsea, were awarded a First-class Certificate for a new hybrid greenhouse *Rhododendron*, named R. x. superbiendum. It has large white blossoms, exceedingly fragrant, of the same type as *Princess Alice* or *Lady Alice Fitzwilliam*, and of the same parents as the *Fosterianum*. Pretty plants of *Capparis Lawsoniana* var. *versicolor* and C. L. var. *tiliflora* were noticed, and a few excellently grown and finely-flowered plants of *Carnation Winter Cheer* and *Streptocarpus Polyanthus*, with numerous rather soft mauve flowers, produced by a *Polyantha* variety, *Jas. Yerruc*. An also exhibited plants in flower of *Cytisus precox* (standard), *Andromeda speciosa cassinifolia*, *Escobaria grandiflora*, and *Cydonia Mulei*.

A few well-grown plants of *Boronia serrulata* and *Coprosma Baueriana variegata* were exhibited by Messrs. W. BAILEY & SONS, Haseley Nurseries, near Messrs. JAS. YERRUC. An extraordinary variety of *Lily of the Valley*, with large inflorescences, and bells of uncommon size, was shown by MESSRS. LAXTON BROS., Bedford.

Messrs. BARR & SONS, King Street, Covent Garden, made a large display, with *Tulip* flowers of many diverse tints.

Several species also were represented, including *T. doganae*, *T. erycinsonii*; *T. e. variegata*, *T. fulgens*, *T. acuminata*, a species with extraordinary attenuated petals; *T. retroflexa*, yellow; *T. viridiflora* *præcox*, &c. (Silver Flora Medal).

Messrs. J. JAMES & SONS, Farnham Royal, exhibited a few crosses of the garden *Cineraria*, with *Senecio cruentus* which were submitted afterwards to the inspection of the Scientific Committee. No. 1 was the result of a cross between *S. cruentus* and the pollen of an ordinary *Cineraria* Nos 2, 3, 4, and 5 were the result of crossing this hybrid (No. 1

erect stout stems, to the number eight or nine flowers upon each. A slight tinge of lilac could be observed upon the exterior of the tubel.

Mr. H. B. MAY, Dyson's Lane Nurseries, Upper Edmonton, showed five varieties of the Fern, *Lomaria ciliata*. A distinct variety, named *Major*, was recommended an Award of Merit; and another one of very pleasing appearance, named *Grandis* a First-class Certificate.

Mrs. POWYS, Cornwall, showed *Myosotidium nobile*, from the open ground. It is the only species, and belongs to

Probably, in consequence of the Hamburg Show, there was a smaller display of Orchids than usual, but the show made was bright and interesting. *Odontoglossums* formed the chief feature, and of these WELBORN S. ELLIS, Esq., of Hazelbourne, Dorking (gr., Mr. Barrell), and R. BROOMAN-WHITE, Esq., Arddarroch, Garslohead, two amateurs famed for the cultivation of *Odontoglossums*, had good groups of these favourite flowers, the former gentleman securing a Silver Flora, and the latter a Silver Banksian Medal.

Mr. WHITE'S group contained the only plant which was



FIG. 100.—MYOSOTIDIUM NOBILE.

(Shown at the Drill Hall, on Tuesday, April 27, 1897, from the open ground, in Cornwall. See Report of Royal Horticultural Society's meeting on this page.)

with *S. Heritieri* No. 6 of *S. Heritieri* with pollen of *S. cruentus*. No. 3 had white flowers, with foliage similar to that of *S. Heritieri*. It is pretty, and would make a useful greenhouse plant.

Some samples of metallic labels were submitted by Mr. J. A. HORSLEY, 295, Southampton Street, Camberwell, which appeared to possess considerable merit.

An Award of Merit was recommended to *Primula Traillii* shown by G. F. WILSON, Esq., Weybridge and Wisley. The plant is evidently closely related to *P. involucreata*. It has similar oblong lanceolate leaves. The flowers were pure white, with a yellow ring at the apex of tube, supported on

Boraginace. It is semi-hardy, and difficult of cultivation, rarely seen in flower in the open. It produces large, fleshy caves, and white flowers with blue centres. (See fig. 100.)

Orchid Committee.

Present: Harry J. Veitch, Esq., in the chair; and Messrs. Jas. O'Brien (Hon. Sec.); De B. Crawshaw, H. J. Chapman, R. Brooman-White, W. H. Frothero, W. H. Young, F. J. Thorne, W. H. White, J. Jaques, Thos. Statter, W. Cobb, E. Hill, J. Douglas, S. Courtauld, H. Williams and H. M. Pollett.

awarded a First-class Certificate, viz., *Odontoglossum crispum* *heliotropium*, a variety with fine y-formed, light rose-coloured flowers, the petals bearing many, and the lower lobes of the sepals fewer bright reddish purple spots. The group contained several excellent forms of *O. crispum* and *O. x Andersonianum*; and two plants of the pretty *Arddarroch* crossed *Cattleya x Lawrenceana-Mossie*.

In Mr. ELLIS'S group, the specially noteworthy plants were *Odontoglossum crispum* "Cecil Clay," a fine form of the *O. c.* *Trianae* class, with large blotches on the sepals; *O. c.* "Emily Ellis," another fine spotted form; *O. c. roseum*, *O. c.* "Geraldine Mitchell," *O. Pescatorei*, *Hazelbourne* variety, with petals

spotted with purple, and which had been previously certified; *O. x Andersonianum*, *Halsburium* variety, a very handsome flower; *O. citreolum*, *Cattleya citrina*, with nine flowers on a single plant; *Epidendrum ciliare*, *Lycaste aromatica*, &c.

Messrs. F. SANBURN & Co., St. Albans, were awarded a Silver Banksian Medal for a good group, in which a conspicuous figure was *Phalenopsis alba*, new, a fine pure white variety, growing only 1 foot in height. At the rear of the group some fine spikes of *Oncidium Marshallianum*, *Odontoglossum luteo-purpureum*, and *O. crispum*; well-flowered plants *Mitonia vesicaria*, *M. v. leucoglossa*, the pretty little *M. Phalenopsis*, *Maschavella x Munyana*, the singular salmon-coloured *Coleogyne tomentosa*, *Phalenopsis Aphrodite*, a very singular and pretty *Lycaste Skinneri*, with pure white lip, and tips to the petals; *Mitonia Warszewiczii*, *Dendrobium Phalenopsis Schroderianum*, and *Vanda Benussi*, were noted.

Messrs. HUGH LOW & Co., Clapton, staged a group, in which were *Odontoglossum x excellentia* Lowie, a very fine form, with bright yellow flowers, spotted with chestnut-brown, the spike carrying fifteen flowers, and secured an Award of Merit. Plants were shown of *Bulbophyllum claptoneum*, resembling a very dark-coloured *B. Lobbi*; *Cattleya Lawrenceana*, *C. Lawrenceana*, a large number of a lilac hue; *Odontoglossum Andersonianum foveolatum*, an unspotted variety; a number of fine *Cattleya Mendii*, *Odontoglossum crispum*, and other *Odontoglossums*, *Lelio-Cattleya x Schilleriana*, *Oncidium papilio*, *O. phymatostichum*, *O. caradocense*, *Dendrobium Bensoni*, *D. lituitiforme*, *Cypripedium Curtisii*, *C. x grande*, and its darker variety *stratum* (Silver Banksian Medal).

Messrs. B. S. WILLIAMS & SON, Victoria and Paradise Nurseries, Upper Holloway, N., received a Silver Banksian Medal for a very effective group, consisting of fine varieties of *Cattleya Mendii*, *C. Lawrenceana*, a large number of showy *Odontoglossum*, *Calanthe veratrifolia*, *Dendrobium Devonianum*, *D. crystallinum*, and *D. thyrsoiflorum*, *Eulophia Elisabetha*, *Lycaste Schilleriana*, a singular and pretty variety of *Mitonia spectabilis*, with some purple marks on the petals, and several radiating dark rose lines on the lip; *Cypripedium x grande*, *C. Boxallii*, *C. barbipurpureum* Warneri, *C. x varietatum*, *Oncidium concolor*, *O. Phalenopsis*, the very pretty *Trichocentrum tigrinum*, *Vanda suavis*, *Ad. arantaria*, &c.

Major JOCEY, Sunningdale Park, Sunningdale (gr. Mr. Fred J. Thorne), showed a splendid example of the bright orange-coloured *Oncidium concolor*, with flowers entirely of a pendulous raceme of seventy-four flowers (Cultural Commendation), and a fine inflorescence of *Eriopsis rufidubium* with greenish-gold and purple sepals and petals, and pure white lip spotted with purple.

Mr. MARQUIS OF CAMBER, Bayham Abbey, Kent (gr. Mr. A. Methuen), received a Cultural Commendation for a most exquisite example of *Dendrobium thyrsoiflorum* with twenty-seven spikes, averaging over forty flowers each; and which was purchased at Messrs. Protheroe and Morris' Rooms as a single piece some two or three years ago.

Mr. W. MARTIN, Esq., Lakeside, Ryeford, Surrey (gr. Mr. P. Bradley), showed a fine single specimen of *Laelia purpurata* with two spikes, the one bearing seven, and the other five fine flowers.

WM. WHITE PALMER, Esq., Rutland Lodge, Kent, showed a fine single specimen of *Dendrobium infundibulum*, with a large number of white flowers with yellow blotch on the lip (Cultural Commendation).

H. T. PITT, Esq., Rosslyn, Stamford Hill (gr. Mr. Aldous), showed *Odontoglossum Hallii*, Rosslyn variety, a very handsome form, with broad sepals and petals with very dark marking, and pure white lip blotched with brown.

MALCOLM S. COOK, Esq., Kingston Hill, showed a group in the centre of which was a finely-flowered *Mitonia vesicaria*, and with it good *Odontoglossum crispum*, *O. Hallii*, *Maschavella x Chelsoni*, and *Sophronitis grandiflora* (Bronze Banksian Medal).

J. S. STRECHMAN, Esq., Bowden, Cheshire, showed *Dendrobium noble* *varietatum*, with flowers tinted with a peculiar pale cherry-red hue.

Narcissus Committee.

Present: Messrs. C. R. Secker-Dickins, Jas. Walker, A. Kingsmill, W. Barr, J. D. Bennett Poë, Miss Willmott, and others. The display of Narcissus was naturally less in quantity than on the 13th; but flowers from the North, and from Holland, where the season seems backward rather than early, were still shown in fair abundance, and excellent in quality.

Messrs. BARR staged an imposing bank of the various sections, the prominent feature being a large gathering of their fine new *Beobor Ajax*, Victoria, a flower of fine form and stout substance, which gained an Award of Merit. The large new Trumpets, Shakespeare and Fred Moore, also attracted attention (Silver Flora Medal).

Messrs. VETCH included in their exhibit, which was very tastefully set up with foliage and Ferns, a considerable number of their new seedlings, one of which, a medium-sized flower, with brilliant red, shortened corolla. From the committee desired to see again when more fully expanded. The white Trumpet—Madame de Graaff—was exceptionally good in this stand (Silver Flora Medal).

Mr. J. W. WILSON, Dretton Street, South Cave, Yorks., obtained a Silver Banksian Medal for a considerable and varied collection, which had travelled well.

The Rev. G. H. ENGLEHART showed a small selection of new hybrids, noticeably a strain of poetical, intermediate

between the early-blooming *gratum* and the late racemes and veins, yielding circular, firm-petalled flowers, intermediate in form and season. A *Lilio incomparabile*, with sulphur-white divisions, and very bright open yellow centre, took the prize for the best seedling of the meeting, and a very graceful hybrid between poetical and triandrum, with several delicately tinted flowers on each stem, was awarded a First-class Certificate.

Mr. W. WILKS, Shirley Vicarage, Croydon, showed an extraordinarily large-flowered and robust form of *B. biflorus* (Award of Merit).

Fruit and Vegetable Committee.

Present: Philip Crowley, Esq. (chairman); and Messrs. Jos. Cheal, Jas. H. Veitch, A. F. Barron, A. H. Pearson, J. Wright, Alex. Dean, W. Farr, J. W. Bates, Geo. Woodward, Jno. A. Laing, Geo. Wythes, F. Q. Lane, Jas. Smith, J. Willard, and Robt. Fyfe.

Mr. Wythes, gr. to Earl Percy, Syon House, showed a select lot of vegetables in season. We remarked in varieties of Potatoes—*Buton's Al*, Early May, like *Mon's Pride* in shape; *Sharpe's Victor*, English Beane Improved, and *Myatt's Ashwell*.—Of these there were *Sutton's Late Queen*—surely out of season (?), and *Veitch's Model*; *Cabbage Sutton's Early Favourite*, and apparently early hearing varieties; some very robust heads of *Seakale*; and ripe and green Tomatoes, as grown on the same bench. *Fig St. John*, a variety of a vivid green colour in the ripe state, and *Royal Sovereign Strawberries*, taken from plants awarded a right to ten fruits on each; and *Keen's Seedling*, of good size, from plants carrying the same number. Some new and old black and white Grapes came also from Syon. An Award of a Silver Banksian Medal.

Messrs. HURST & SON, Hounditch, contributed some heads of a fine large Broccoli under the name of *Hurst's Early April*. It is somewhat cone-shaped, the curd creamy-white and firm.

Mr. RUSSELL, Farborough, showed a new variety of Strawberry, named *Early Giant*, a large corrugated fruit, of poor flavour, said to have been raised from Sir J. Paxton and Green's seed. It is surprising that the flavour is not better, coming from such good sources.

Mr. O. THOMAS, gardener to the QUEEN, Frogmore, showed capital yellow-fruited Tomato Royal Windsor, a fruit of large size and fine flavour. It is oblate, and slightly corrugated. The information was accorded that it is the result of a cross between Prince of Wales and Frogmore Selected. Judging from a piece of stem shown it is a prolific variety (Award of Merit). Fruits of the latter were also shown—smooth, crimson-coloured fruits; also, some of a new Strawberry, called Sir Trevor, out of *Isa Grosu Sacree* and *Royal Sovereign*. The fruits throughout were of a Cooks-shape, large, and of good flavour.

Dwarf French Beans *Ne Plus Ultra* and *Early Favourite* were shown by Messrs. J. VEITCH; the former being likewise shown by Messrs. WATKINS & SIMPSON; Dwarf French Bean Emperor William by Mr. ERNEST BENARY, Erfurt—a broad, flat pod, with prominent seeds; *Mohawk Improved* French by Mr. G. WATKINS, and *Golden Wax Bean*, by Messrs. BARR, SON'S; *Osborne's Forcing*, by WATKINS & SIMPSON; and by DAMMAN & Co.; received an Award of Merit.

In the competition for the highest flavour in Apples, which has now greatly fallen off in regard to the number of exhibits, the 1st prize fell to Mr. C. HERBIN, Dropmore, with *Summer Pippin*; 2nd to Mr. T. BLACK, Bury St. Edmunds, with *Brandy Pippin*. A few other varieties of Apples were shown, including *Baxley's Pearmain*, *Claygate Pearmain*, and *Scarlet Nonpariel*.

Messrs. HILLIER, Winchester, showed handsome fruits of *Huller's Easter Orange Apple*, said to have a tender flesh and pleasant flavour (an Award of Merit).

The Lecture.

In the afternoon Mr. ALEX. DEAN read a paper upon "Winter and Spring Bedding." The lecture was prefaced by a few general remarks upon the whole subject of "bedding out," or the planting of beds with diverse plants to create effect.

Mr. Dean spoke extensively where such planting had been practised skillfully and to great advantage, results, but admitted that extremists had sought "vulgar effects," and had made "garish combinations." Later, when speaking of spring gardening more particularly, a stronger view was taken, and the massing of Tulips and Hyacinths in squares that had been severely deprecated. Those who profess to admire such displays of bulbs as are to be seen annually in the London parks and elsewhere, were placed in the same category as persons who prefer the displayed posters upon the hoarding in the streets to the exhibits in the National Gallery.

Mr. Dean referred in appreciative terms to the manner in which the beds at Chiswell and Heckfield were furnished by Fleming and Wildsmith respectively, and added, that since their days, particularly Fleming's, there had been placed within the reach of the gardener a large number of confiduous and other plants, particularly suitable for the purpose of furnishing beds during winter and spring. In referring to a paper upon the subject, read before the Royal Horticultural Society a few years since, by the Rev. W. Wilks, Mr. Dean criticised the view then expressed, that the plants should be kept in pots, to be merely plunged in the beds. Confiduous and other evergreens, also deciduous flowering shrubs, if moved twice during the year, would make comparatively little growth, but they would develop a mass of fibrous roots, and by means of such escape injury.

A very long list of plants suitable for planting in beds was attached to the paper, but not read, Mr. Dean remarking that, apart from *Conifers*, there were *Stimulias*, *Aucubas*, *Persea*, *Deutzia*, *Myrica*, *Portulacaria*, *Prinos*, flowering *Cornus*, variegated *Conifery*, *Ribbon-grass* (*Phalaris arundinacea variegata*), variegated *Cross*, *Ice*, *Tulips*, *Hyacinths*, *Squills*, and other bulbs, though not desirable when massed, were nevertheless invaluable to plant with discretion among the other plants.

The Chairman, the Rev. G. H. Englehart, was not prepared to endorse Mr. Dean's table of massing spring-flowering plants and bulbs, and thought that it was wrong to give up "massing," our colours altogether we should be improving a lesson frequently taught us by Nature, instancing the sheet of colour produced by the wild *Hyacinths* in Hampshire. The Rev. Mr. Wilks said he remained perfectly unconvinced in the matter of transplanting his shrubs and plants twice each year in preference to keeping them in pots. He would defy Mr. Dean by the system he recommended to successfully treat "tree" Ivies, and if he discarded these he would discard one of the most useful and suitable plants for furnishing beds in winter. The "tree" Ivy is the form that Ivy assumes as it has reached the top of a wall, and therefore ceased to climb. If these shoots are cut off and struck, they maintain the "tree" shape already assumed. All Ivies are impatient of transplantation or interference with roots and "tree" Ivies especially so.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

APRIL 23.—At an adjourned meeting held in the Memorial Hall, Albert Square, Manchester, on the above date, George Shorland Ball, Esq., of Ashford, in the chair, the following proposals were made and seconded by various gentlemen present.—That the society be called the Manchester and North of England Orchid Society, with an entrance fee of one guinea, and an annual subscription of one guinea; that the Right Hon. J. Chamberlain, M.P., be invited to become the first president; that A. Eschworth, Esq., Harefield Hall, Wilmslow, be appointed chairman of the Society and of the Orchid Committee, and W. Thomson, Esq., Walton Grange, Stone, vice-chairman; G. Shorland Ball, Esq., Ashford, Wilmslow, honorary treasurer; and W. A. Gent, Esq., 41, Faulkner Street, Manchester, honorary secretary. The following twelve gentlemen were elected members of the Committee, viz., Messrs. J. Anderson, W. Bolton, H. Greenwood, Capt. G. W. Law Schofield, Thos. Statter, E. J. Sidebotham, W. Stevens, A. Warburton and P. Weathers.

The Honorary Secretary intimated that twenty-nine gentlemen had declared their willingness to become members, and it is expected when the thing becomes public, that that number will be at least doubled. The object of the promoters is to get up a sufficient fund to provide, first and foremost, the necessary expenses, then to set apart so much for providing medals and prizes that may be awarded from time to time. It is also contemplated that at the great shows of the Royal Botanic, prizes shall be given from this Orchid Society to such exhibitors, more individual than collective, as are of sterling merit. It is not intended that the meetings held in Manchester should clash with the meetings of the Royal Horticultural Society, so that on each alternate Tuesday the meetings will be held. In this way it is just possible we may see some of the choicest Orchids at both London and Manchester. The new venture will, in fact, be an auxiliary, not subsidiary to the central body in London. The aim is to get only the choicest of Orchids, come from where they may, rather than indiscriminate lots for sale. For all particulars, apply to Mr. G. Shorland Ball, Street, the Hon. Sec., and Mr. Geo. Shorland Ball, 1, Princess Street, the Hon. Treasurer, will supply the necessary information.

The following plants in pots, all beautifully flowered, were sent for the inspection of gentlemen present:—A new and beautiful hybrid *Odontoglossum*, elsewhere described, a natural cross between *O. crispum* and *O. scriptum*; a splendid plant of *O. Wilckeanum* with two spikes 20 inches long, and the flowers very large, and beautifully developed; an equally noteworthy *O. luteo-purpureum*; a magnificent *Halli xanthoglossum*, and a *Cattleya Lawrenceana* with about twenty-four flowers of such brilliancy as one does not often see with a large lip and the two pseudobulbed varieties; the whole lot in perfect health. These came from Mr. W. THOMPSON, Esq., of Walton Grange, Stone.

A very choice *Odontoglossum crispum*, with immense flowers, came from JOHN LEEMANN, Esq., West Bank House, Heaton Mersey; which each would measure about 4 inches by 4 inches, of white ground colour, with great prominent deep chestnut blotches, looking all the better because of the purity of the ground colour. The segments were a bit open, but for adorning a lady's person, the spike with ten flowers in it would be picked by a lady expert, before such close-segmented sorts as those that you have from time to time illustrated in the pages of the *Gardeners' Chronicle*; the number, although partly formed, did not indicate the purity of the ground colour. The segments of the future meetings will be recognised. In case of any difference of opinion, if a vote requires to be taken, it will be taken by ballot. J. A.

FORESTRY.

TYPES OF BRITISH WOODLAND.

(Continued from p. 270.)

MIXED PLANTATIONS.—The formation of mixed plantations on the British method is probably due to two principal ideas. One of these is that variety of species leads to a varied effect in the appearance of the plantation, and the other that amongst a number of different species one or more is sure to thrive, and lead to a promising plantation. In the majority of cases, however, neither of these ideas is justified by results. A certain amount of variety undoubtedly exists in mixed woods, but not in proportion to the number of species used, nor more than may be found in many a pure or nearly pure wood, composed of common forest trees. On the contrary, indiscriminate mixtures planted with mathematical precision have as little effect in making a varied landscape as the particular pattern of a wall-paper has in varying the general artistic effect in the decoration of a room. Harmony rather than variety should be the aim of the landscape planter, and although other than aesthetic considerations may have to be studied, there is no reason why sound principles should not be introduced in forming plantations of this kind, which combine economy and taste without a wide departure from existing customs. As a sylvicultural success, again, the ordinary mixed plantation forms rather the exception than the rule. Experience proves that tall, clean timber is most easily produced when the trees in a wood all belong to the same species, and are of about the same age at the start. On economical grounds, however, it is sometimes desirable to introduce other species, which have a subordinate office to fulfil, such as preserving the fertility of the soil or increasing the bulk of timber on the ground. The ordinary mixture neither furnishes useful timber in proportion to the planted area, nor is the ground utilised in an economical manner, although exceptions to this statement may be met with now and again. Trees which vary greatly in their rate of growth, their longevity, or their shade-bearing capabilities, sooner or later lose touch with their neighbours, and are killed out altogether, or assume an unrestricted habit of growth which seriously decreases their value as timber-trees. No doubt careful thinning may do much to improve matters and remedy these defects, but the time and attention necessary for this are not always forthcoming, and the plantation, under the most favourable conditions of growth, usually becomes one of those arbor-sylvicultural combinations so dear to the heart of a certain class of foresters. But while it may be easy enough to find fault with the existing state of things, it is more difficult to find an effectual remedy. Planters have to consider their reputations, and all are not in the doubtfully-happy position of a gardener to a certain noble duke, who, when instructed to thin a plantation by his employer, replied that his reputation might suffer by so doing. "Do as I wish you," said the Duke, "and I will take care of your reputation," which he did by erecting a notice-board at the edge of the plantation, stating that the latter had been thinned by himself, contrary to the advice and opinion of his gardener. The British forester who planted his woods without the orthodox mixing formula would be risking the loss of a good name if the species selected did not prove altogether a success on the soil and situation. With a comprehensive catalogue before him, it seems almost like tempting Providence to stake all upon one or two kinds of trees, although our predecessors of two or three generations back appear to have adopted this plan with tolerable success—but perhaps they knew no better. At any rate, they had no opportunity of making a selection from several hundred exotic trees, all of which, if we are to believe their introducers, are invaluable as timber producers. That they do not always fulfil the high expectations aroused in the minds of planters, however, is due to no fault of the trees themselves, nor to those who, meeting them in their native habitat, see to them as they ought to be,

and not as they become when planted in unfavourable soils and situations in this country. If, by a happy combination of circumstances, fresh introductions happen to be placed in sites which suit them, their success is frequently regarded as indicating their suitability for extensive planting in this country. If, on the other hand, their growth is not satisfactory, they are prematurely condemned before a fair trial has been granted them. Hence arise those contradictory statements regarding the value of a particular species for our climate, and the uncertainty existing in the minds of planters which results in the planting of mixtures in which variety is more conspicuous than congruity, and which deprives British woods of a good deal of their British character. A. C. Forbes.

(To be continued.)

NURSERY NOTE.

DAFFODILS AT SPALDING.

I HAD recently an opportunity of inspecting the Daffodil Farm of Mr. J. W. White, of Spalding. He has 20 acres of Lent Lilies, divided into two portions, but practically contiguous. The dark soft loam, no doubt covered with water in times past, greatly resembles the soil of the bulb farms of Holland, but is rather heavier, and it may be said to suit Narcissus and Tulips admirably. There is a depth of 15 inches or so, resting upon a subsoil of silt, which may be described as a fluviatile sediment of mud hardened into mould, and when taken in the hand it readily crumbles to powder, being of a soft floury nature. In preparing the ground for planting, a kind of bastard trenching is done. The top spit is thrown over, and then the fork is plunged into the silt, simply loosening it, but not turning it over in any way, and so making it porous. Mr. White has had the land under cultivation for the space of twenty years; and as he brings to the work keen intelligence and foresight, it is not surprising that his success has been commensurate with his enterprise. Mr. White grows Daffodils to supply the trade, and the quality of his bulbs being high, they are in great demand. When one sees bed after bed, and plantation after plantation, of one variety, as at Spalding—300,000 of this, a quarter of a million of that, some idea of the popularity of the Daffodil is realised.

The varieties are in some cases in beds, seven bulbs in a row, following the practice of the old Tulip-growers; and these beds seem innumerable. Then there are huge plantations of varying lengths, some 10 yards in width, and some 12. Imagine a bed of *N. bicolor* Empress, or one of *N. poeticus ornatus*, 160 yards in length, by 12 in width; and, seeing that the strong bulbs—those which will be offered for sale in late summer—produce four and five, up to six and seven blossoms each, the impressiveness of the mass can be imagined. I was struck with the order and cleanliness everywhere, scarcely a weed divides with the Daffodils the rich plant-food in the soil.

Mr. White confines his collection to a few leading varieties, which are among the most popular, and in the greatest demand. Of the Ajax or Trumpet Daffodils, Emperor, Empress, grandis, and Hoisfeldt lead the way; and the double Van Sion, which here is superbly double and symmetrical, thousands of blossoms attract the eye and compel admiration. Of the medio-cronati section, Sir Watkin, of the double Incomparabilis type, *Albus plenus aurantius* (Orange Pheenix), and of the Barri type, *Conspicuus*, and one or two others. I leave out of mention *Glory of Leyden*, *Madame de Graf*, and a few newer forms which find a place on the farm in necessarily small quantities at present. Mr. White is swift to see what are likely to be popular varieties; the commoner forms, whose commercial value rapidly declines, he leaves to others.

As a matter of course, beds are sown containing bulbs of differing development. There are those of young offsets planted last autumn, there are those of a year older, and those a year older still; it requires

from two to three years to produce a good fat round bulb of first quality for sale. At this period of the year thousands of cut-blossoms are sent to market; this being a most active industry, giving employment to many pairs of hands while it lasts. At the end of the summer comes the harvesting, the drying, selecting of the bulbs, and the execution of orders, the bulbs being despatched to their destinations in hampers, so as to admit of air circulating among them while in bulk.

It may be added that Mr. White does a large business with double Snowdrops, as they do remarkably well in the district, though apparently at times somewhat fastidious as to soil and position. He purchases from the small growers, and in this way is enabled to execute orders for large quantities. The culture of Snowdrops is thus also a notable industry in the locality. In one corner of the farm I saw a huge patch of Winter Aconites growing with amazing luxuriance, producing plump tuberous roots.

In specially constructed houses of considerable dimensions, Mr. White grows Tomatos on a large scale, the plants already approaching blooming. The houses are employed in winter and spring for forcing Narcissus into bloom. The roots are placed in boxes, and yield a supply of bloom when prices are best. R. D.

THE WEATHER.

[The term "accumulated temperature" indicates the aggregate amount, as well as the duration, of degrees of temperature above or below 42° Fahr. for the period named; and this combined result is expressed in Day-degrees—a "Day-degree" signifying 1 continued for twenty-four hours, or any other number of degrees for an inversely proportional number of hours.]

Districts. Above 42° or below 42° the Mean for the week ending April 24.	TEMPERATURE.				RAINFALL. Inch.	BRIGHT SUN.			
	ACCUMULATED.								
	Above 42° for the Week.	Below 42° for the Week.	Above 42° difference from Mean since January 3, 1897.	Below 42° difference from Mean since January 3, 1897.					
	Day-deg.	Day-deg.	Day-deg.	Day-deg.	10ths Inch.	Inch.			
0	1	32	16	+ 4	12	75	181	66	25
1	2	31	15	- 13	- 2	63	53	41	25
2	1	25	10	+ 28	- 70	69	74	41	26
3	1	33	8	+ 36	- 114	1	68	82	47
4	2	36	9	+ 15	- 109	0	67	98	44
5	1	37	1	+ 40	- 175	2	64	107	51
6	2	35	14	- 18	- 18	3	70	133	51
7	2	39	6	+ 20	- 76	2	74	104	48
8	1	35	3	+ 31	- 130	1	80	164	41
9	2	33	11	+ 27	- 61	1	81	123	45
10	1	39	0	+ 34	- 4	1	77	152	41
*0	aver	54	0	+ 123	- 83	1	86	140	37

The districts indicated by number in the first column are the following:—

- 0, Scotland N. Principal Wheat-producing Districts—1, Scotland, E.; 2, England, N.E.; 3, England, E.; 4, Midland Counties; 5, England, including London, S. Principal Grazing, &c. Districts—6, Scotland, W.; 7, England, N.W.; 8, England, S.W.; 9, Ireland, N.; 10, Ireland, S.; *Channel Islands.

THE PAST WEEK.

The following summary record of the weather throughout the British Islands for the week ending April 24, is furnished from the Meteorological Office:—

"The Weather continued unsettled, with rain at times, during the earlier part of the period, but later on it became dry and fine—first in the north and west, and subsequently in the other parts of the kingdom.

"The temperature was rather below the mean in all districts excepting the 'Channel Islands.' The highest of the maxima, which were recorded during the earlier part of the week, ranged from 63° in 'Ireland, N.' (at Londonderry), and 61° in the 'Channel Islands,' to 57° in 'Scotland, W.,' and over central and eastern England, and to 54° in 'England, N.W.' The lowest of the minima were registered on the 23rd, and ranged from 29° in 'Scotland, E.,' and 27° in 'Scotland, N. and W.,' to 30° in the 'Midland counties,' 37° in 'England, S.,' and 33° in the 'Channel Islands.'

"The rain-fall was rather more than the mean in 'England, N.W.' and 'Ireland, N.', and just equal to it in the 'Midland counties'; in all other districts, however, there was a deficit.

"The bright sunshine exceeded the mean in all districts except 'England, S.W.' and the 'Channel Islands.' In the extreme north, the excess was very large. The percentage of the possible duration ranged from 69 in 'Scotland, N.' to 51 in 'England, S.' and 'Scotland, W.', and to 37 in the 'Channel Islands.'"

MARKETS.

COVENT GARDEN, APRIL 29.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Thursday, by the kindness of several of the principal salesmen, who revise the list, and who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general averages for the week preceding the date of our report. The prices depend upon the quality of the samples, the supply in the market, and the demand; and they may fluctuate, not only from day to day, but often several times in one day. (En.)

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

Table with columns for flower types (Anemones, Tulips, etc.), quantities, and prices. Includes sub-sections for Orchids and Acacia dealbata.

ORCHID-BLOOM IN VARIETY.

FOUR.—AVERAGE WHOLESALE PRICES.

Table listing various fruits (Apples, Peaches, etc.) and their average wholesale prices.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

Table listing various plants in pots (Adiantum, Aspidistra, etc.) and their average wholesale prices.

BEHOLDING PLANTS AND ROOTS FOR THE GARDEN IN VARIETY.

VEGETABLES.—AVERAGE WHOLESALE PRICES.

Table listing various vegetables (Artichokes, Asparagus, etc.) and their average wholesale prices.

POTATOS.

No alteration in prices of old Potatoes since last report. Dumber Maincrop, 50s. to 90s.; do. Saxons, 75s. to 78s.; do. Dutch Saxons and Maincrops, 75s. to 80s.; Giant, 50s. to 60s. per ton. Canary, new, 16s. to 18s.; Guernsey and Jersey do., 24s. to 26s.; Malta do., 9s. to 14s. Lisiez do., 9s. to 10s. per cwt. John Bath, Wellington Street, Covent Garden.

ENQUIRY.

Would some reader of the Gardeners' Chronicle kindly inform M. F. if dressings of Kainit would destroy the kind of sel-worm (Tyleuchus devastatrix), which attacks several species of grasses, doing considerable damage to pastures, &c., and which, when the infested turf is used for potting plants, and in making Chumbar and Melon-beds, is so very destructive?

NOTICES TO CORRESPONDENTS.

ACACIA DEALBATA: B. S. Wood. The leaves might fall from the plants from a variety of causes. It may have got very dry at the root on the journey from Cannes, and that would be sure to result in the fall of the leaves. The deprival of fresh air might be another cause, the plant having been grown out of doors; or gas in the study might be a cause. As you do not possess a greenhouse, the plant should be stood near the light in an unoccupied room, facing south or west, and afforded ventilation from 8 A.M. to 6 P.M., and towards the end of June it may be stood out of doors, with the pot plunged to the rim in a flower border with a handful of coal-ashes beneath it. Let it be in a fairly sunny spot. The plant may need repotting, or at the least, the drainage put in good order. It must not have large shifts when repotted, or it will not flower well. If you do not put it forthwith, it may have a shift into a bigger pot in July. The best kind of compost for the plant is peat two-thirds, loam one-third, and sand a little. When well rooted, Acacias, during the summer, need plenty of water, but a plant that is plunged will not require water so often as one that stands on the surface. Daily syringing in hot weather does good, by keeping red-spider at bay. It should be done not earlier than 6 P.M. If there are shoots which have flowered, cut them back to about half their length.

ANEMONE: T. Bibby. The foliage shows no fungus disease, nor do the roots. It is possible that in a more advanced stage, there might be evidence of the presence of a "rot-mould" similar to that of the Potato-disease. The appearance resembles that of plants attacked by Plasmodium pyramis, but as yet there is no direct evidence. Watch for a small whitish mould in patches on the leaves. You may try the application of one of the copper solutions, and transplanting, M. C. C.

CHERRIES DESTROYED WHILEST QUITE SMALL: C. We found no insects in or on the fruits, but doubtless the injury was due to an attack of the small caterpillars of the winter-moth, so destructive out of doors to the Apple. The caterpillar of Chamaetuba brumata is light-green in colour, with three white stripes on the sides. It eats a hole in the fruit on one side. There is no remedy now, the caterpillar having slung itself down to the ground, where it will turn to a pupa, to reappear late in the year. In October, tar-hands should be put round the stem, and the latter washed with lime dissolved in skim-milk. In October, the whole of the crust of the soil in the pots, and of the bed on which the latter are placed, should be cleared away to the depth of 5 or 6 inches, and buried deeply in the kitchen-garden, or charred by placing it over the garden bonfire.

FUNGUS ON A LARCH POST: A. C. F. It is a large Myxomycetes, in an early and imperfect stage, called Reticularia lycoperdon. It becomes when ripe a powdery mass of amber-brown spores. M. C. C.

INSECTS ON PEAR: F. W. Thomas. The caterpillars seen are those of the winter-moth. Spray the trees with Emerald (Paris) Green at the rate of 3-lb. to 50 gallons of water, first mixing the Paris Green in a small quantity of water, and then add it to the whole supply. You must be constantly stirred to keep it in suspension. If this quantity of Paris Green does harm to the foliage it must be lessened, so it is better to proceed cautiously. Do not use it in wet weather, or when the trees are in flower. In three or four days give the trees another dressing. It is extremely poisonous, and should not be applied to fruit or vegetables used for food soon afterwards. Emerald Green is the English, Paris Green, the American name. Let the bag be labelled POISON, and be kept locked up safely out of the way of children. The person who uses the powder or wash should not have any of the skin or wounds on the hands or face, and not inhale the powder when mixing it.—Northleigh. Bibio Marci (St.

Mark's Fly.) See Gardeners' Chronicle, 1814, Nov. 16, for fig., &c. The best remedy against the larva is hand-picking, which is not attended with any difficulty, for the localities they inhabit are readily discovered in the spring by the fine earth which is turned up by them, where they live in societies.

MOSSY LAWN: Moss. With an iron rake scratch off all the moss you can, then dress the surface with loam three-quarters, and one-quarter sifted wood-ashes made from green twigs, leaves, or in wood. A second dressing may be given in July in showery weather. If the land is wet, it is in need of draining, and no measures will have a permanent effect till this be done.

MUSHROOMS ATTACKED BY A MOULD: A. F. It is not uncommon for Mushrooms to be attacked by the mould on the gills. It has nothing to do with the spawn. This is the first stage of a kind of Hyponyces, which has never been fully developed, and is generally confined to the bed in which it appears. Nothing will save the Mushrooms in the bed so attacked, but spreading should be prevented by destroying the bed, and disinfecting the place. M. C. C.

NAME OF FRUIT: W. H. G., Croton. Apple Datch Mignoone.

NAMES OF PLANTS: Correspondents not answered in this issue are requested to be so good as to consult the following number.—1. Dentrobium chrysotoxon; 2. Odontoglossum; 3. Rumphia; 4. Odontoglossum luteo-purpureum; 5. Odontoglossum luteo-purpureum; 6. Odontoglossum tripudians.—D. M. P. 1. Quercus glabra; 2. Ilex dyprena; 3. Louisa xylocotum.—A. E. M. A. Staehoupa, but of which species cannot be determined until you seed flowers. Grow in a hanging Orchid-basket, the flowers protruding through the basket.—J. B. 1. Oucidium preteritum; 2. Oucidium Marshallianum; 3. Dendrobium infundibulum.—J. C. G. 1. Daphne laureola; 2. Ruscus hypoglossum; 3. Corydalis cava; 4. Primula dentata; 5. Muscari botryoides.—J. M. Dendrobium thysanotum; S. L. 1. Melancholium canadense; 2. Spirea Thunbergii.—A. S. C. Ribes aureum. 2. Interest. 1. Polygonatum officinale; 2. Adiantum Paccoti; 3. Adiantum pedatum; 4. Selaginella denticulata; 5. Adiantum gracillimum; 6. Pteris caesia alba; 7. Corchorus (Kerria) japonica.—H. W. Potamocharis mucronata, figured in our volume xii., third series, 1896.—G. R. T. Skimnia Fortueae.—E. S. R. 1. Sixifraga (Mogosa) cordifolia; 2. Achusa italica; 3. Saxifraga hypnoides; 4. Solium reflexum; 5. Primula denticulata; 6. Narcissus odorus; 7. Narcissus, probably a hybrid.—F. Ashton. We will endeavour to identify the seed.

PEACHES: Avaratum. Mildew; remove the infected fruits, and burn them. Use sulphur on the hot-water pipes. See our issue for April 24, p. 250.

SUTTON'S FORCING FRENCH BEAN: A. C. The variety was not sent for trial.

VINES: Thistle Brothers. If the points of the shoots turn brown in colour, and become leathery, and the malady subsequently attacks the leaves, the Vines are suffering from the so-called "browning," an obscure disease caused by a slime-fungus. You might use a mild form of the Bordeaux Mixture, or flowers-of-sulphur against it. Should these signs of the fungus disease not be present, the browning of the leaves is due to errors in ventilation.—T. L. We are sorry that we misunderstood your letter. The Vine Manuals are not dead—only by Mr. Wolneyer, and published by L. Upcott Gill, 170, Strand, costs but 1s. Doubtless, the bundling up of the canes whilst the leaves were still upon them, in the autumn, hindered the ripening of the wood. Unless the rods are of great strength, twenty bunches are too many. In removing superfluous bunches, take the small and ill-shapen ones. Keep the vineyard dry, but not arid, as that might result in the premature shrivelling of the flowers. Vines are never exposed to arid or even dry conditions in a vineyard, and, except in winter weather, the plants are wet with dew every night, and rain has no perceptible effect on the setting of the blossoms; so do not er, in keeping the vine very dry.

COMMUNICATIONS RECEIVED.—D. T. F.—W. H. M. B.—A. B. A. H. M. Stockholm.—M. D. C. H. P. T.—G. G. G. P.—L. G.—Dr. H. rz, Hamburg.—F. V. T.—Lord C.—Dr. J. W. C. Kentucky (letter follows).—E. N. G.—W. G. H. C.—August Viers.—D. H. W.—Laura Mathe.—J. A. C.—A. O.—E. C.—II. C. P.—A. D.—W. R. L. H.—W. H. W.—R. B. Lard & Sons.—A. C. F.—W. F.—S. D. J. J. W.—F. H. G.—W. G.—H. E.—J. S.—G. F.—R. B. Dicks.—H. M.—J. Simpson.—W. Early.—A. B.



THE
Gardeners' Chronicle.

SATURDAY, MAY 8, 1897.

THE FORESTS OF WESTERN AUSTRALIA.

PROBABLY mere persons in this country have heard of the Coolgardie railway and gold-field, its lack of water, and its barren surroundings, than of the vast forest belt and saw-mills of the south-western part of Western Australia. But even to those who knew of the existence of colossal Gum-trees, Mr. J. E. Brown's official report as to the extent and value of the forests of this colony,* is in the nature of a revelation. Mr. Brown has been successively Conservator of Forests for South Australia, and Director-General of Forests in New South Wales, so that he brings some experience to bear on his task; and certainly the report before us is a model of conciseness, whilst the illustrations, though somewhat cloudy, are extremely interesting and instructive.

Mr. Brown estimates that the Australian colonies combined possess an area of 47,000,000 acres upon which useful marketable timber is actually growing. He further puts the number of different species of Australian timber trees at 600, but this would include everything in the shape of a tree. There is, of course, a vast number of different kinds of trees that produce timber, or perhaps one should say wood, that is useful for home industries and local purposes, though not for export; indeed, Mr. Brown's list of the principal forest-trees of Western Australia is limited to thirty-five species, half of which belong to the genus *Eucalyptus*, seven belong to the genus *Banksia*, three to *Casuarina*, three to *Acacia*; and the others are—*Agonis flexuosa*, *Frenela verrucosa*, *Melaleuca Leucadendron*, and *Santalum cyngrum*. With the exception of the *Santalum* (Sandal wood), which is exported to the value of upwards of £30,000 in some years, it is only a few of the species of *Eucalyptus* that are of any great commercial value. Foremost among these is the Jarrah, *Eucalyptus marginata*,† a species restricted to the south-west, between King George's Sound and Cape Leeuwin, and northward to the Moore river. Although the most valuable of the timber-trees, its appearance is neither noble nor impressive. Our author says: "Taken as a whole, there is nothing particularly picturesque about the appearance of a Jarrah tree, or of a forest of them. Indeed, the general effect is dull, sombre, and uninteresting to the eye. Except in special spots and localities, the trees are rugged, and decidedly inclined to be straggling and branchy."

The Jarrah is surpassed in size by several other species of *Eucalyptus*; yet trees from

* Rep. on the Forests of Western Australia, their Description, Utilization, and Proposed Future Management, with plan and illustrations. (Perth, W. Australia, 1896.)

† I should mention that only a few of the species of *Eucalyptus* are called Gum trees in the colonies.

90 to 120 feet high, with trunks from 3 to 5 feet in diameter, and 50 to 60 feet to the first branch, abound in some districts. Individual trees occur of much larger dimensions, up to 150 feet high, with a girth of 22 feet at 5 feet from the ground, and 80 feet up to the first branch. There are records of even larger trees.

The Karri, *E. diversicolor*, is the next in importance. This, Mr. Brown describes as the giant tree of Western Australia, if not of the whole Australian continent; an assertion, he adds, he makes without much fear of contradiction, though he gives no measurements in support of it. On the other hand, the late Sir F. von Mueller has put on record that he had observed many Karri trees which approached 400 feet in height, and he mentions one that was 300 feet up to the first branch; but he gives even larger dimensions for *E. amygdalina* of the eastern colonies.

The Karri is now extensively cultivated in the Mediterranean region, where it is, or was, generally known under the name of *E. collosa*. Mr. Brown says there is no doubt that the Karri is the finest and most graceful tree in the Australian forests, the mature trees being grand in the extreme. The tall, clean trunks are of a polished white. Painting No. 782 in the "North" Gallery at Kew will give some idea of the grandeur of this tree. Like many other species of *Eucalyptus*, it grows very rapidly; yet it has a very hard wood. Mr. Brown describes one exceptionally fine tree containing 6000 cubic feet, or 40 tons of timber in the bole, from the ground up to the first branch. The range of this tree is much more restricted than that of the Jarrah, being limited to the country between King George's Sound to the east, and Cape Hamelin to the west, between 115° and 118° of longitude, and 34° to 35° of latitude.

The Toorati, *Eucalyptus gomphocephala*, is another species of commercial value, and is described as a handsome tree, having bright green leaves, like the Karri. Though of smaller dimensions, its timber is classified as the strongest, heaviest, and toughest in the colony. Among other ornamental species, *E. calophylla* and *E. ficifolia* deserve mention; the former for its beautiful foliage, and the latter for its showy crimson flowers.

Some of the universally dispersed *Acacias* are both useful and ornamental. Raspberry Jam is the vernacular name of *A. acuminata*, owing to the scent of the wood, which is said to be remarkably similar to that of Raspberries.

Mr. Brown estimates that the Jarrah, associated with the Blackbutt, *E. patens*, and the Red Gum, *E. calophylla*, covers an area of 8,000,000 acres, and the total of the principal forest area of Western Australia at 20,400,000 acres. He further estimates the total matured timber at 62,300,000 loads, though he considers much more exists. This matured timber, he urges, should be removed, to make way for succeeding crops. The present yearly output of the colony, on the same authority, is about 130,000 loads, from which he calculates that it would take something like 200 years to cut out the timber that is now ready, and thus a large portion would be lost through decay, if there were no increase in the output. If Mr. Brown had said "something like 400 years," he would have been nearer right, assuming his other figures to be correct; but there is a vein of warmth and enthusiasm pervading this report that betokens a little over-estimation. For instance, he has come to the conclusion that a "forest of marketable Karri can be produced in the short

term of from thirty to forty years." This is based upon counting the concentric rings of a tree felled under his supervision; a tree which he characterises as a sapling in comparison with the surrounding members of the forest. It was 153 feet high, about 2 feet in diameter, contained 175 cubic feet of timber, and showed thirty-five concentric rings.

Mr. Brown has enjoyed such opportunities for gaining knowledge in Australian forestry, that we are bound to accept his statements as substantially correct, marvellous as some of them may seem. Even supposing that his ideas are not fully realised, there should be a great future for Australia in her forests, provided they are properly managed. But with regard to rapid growth of Gum-trees, his data are substantiated by other observers, both in Australia and in other countries where Gum-trees have been introduced. Thus it is recorded that *E. amygdalina* grew to a height of 60 feet in nine years in the vicinity of Lago Maggiore; and a specimen of *E. Globulus*, in the same place, fully 120 feet high, was supposed to be only twenty-eight years old.

If we turn to the illustrations, thirty in number, in Mr. Brown's report, we find more convincing evidence, should more convincing evidence be required. There are views in the forests; there are views of individual big trees, both standing and felled; and views of the railways and trains of logs. In short, anyone interested in trees or timber may learn much from Mr. Brown's report. *W. Botting Hemsley.*

ORCHID NOTES AND GLEANINGS.

A CURIOUS ODONTOGLOSSUM.

A VERY singular flower of *Odontoglossum crispum* is sent by Mr. James McBean, Cooksbridge, Lewes, Sussex, a clever grower of *Dendrobiums* and *Odontoglossums* for market purposes. The upper sepal and the petals are normal, and beyond some laceration of the edges, show no change; the column also is perfect, but there are two labellums, each of them perfect. The lower sepals are joined together for half their length, and exhibit the mid-ribs of three instead of two, each of which carries its blade free for the remaining outer half of its length, the central one being arrow-shaped. The whole is flatly displayed, and the lower sepals assume the form of a trident.

VANDA CRISTATA.

This is a very remarkable species, and through the lesser alpine form, *V. alpina*, seems to connect *Luisia* and *Vanda*; and Lindley originally placed *V. alpina* in that genus. It is rather widely distributed in the Himalayas, and doubtless locality has much to do with its varying from small and merely curious forms to those which are striking and even showy. A very handsome variety is flowering in the Hon. Walter Rothschild's collection at Tring Park. The flowers are 2 inches across, the sepals and petals cream-coloured, tinged with green; the large fleshy labellum, which bears at the apex the usual diverging horn-like processes, but much enlarged, is corrugated, and in colour deep blood-red, with the raised portions pure white. The flowers vary in the proportion of white and red in the lip, but all are very striking and attractive.

ZYGOPETALUM BURTH VAR. WALLISII.

This remarkable variety is so much larger and finer than the type in every respect, that Professor Reichenbach at first took it for a distinct species, and described it under the old sub-generic name as *Batesmannia Wallisii*. A superb form of it is now in flower in the Right Hon. Lord Rothschild's gardens, Tring Park. The large wax-like flowers are just 5 inches across; the broad sepals are white at the base, changing to pale yellow, and their warded

glossy surfaces are tinged with chestnut-brown, a yellow band enclosing the lower area. The petals are similarly coloured, but have at the base a patch of purple lines and blotches. The base of the lip is white, with a crest of purple spines, the apex being dull purple. Column white, with green and purple wings. It is a very rare plant, and at Tring it thrives well.

ORCHIDS AT ASEFORD, WILMSLOW, CHESHIRE.

The collection of O. Shorland Ball, Esq., has taken a leading position among the many collections of Orchids around Manchester, and it is likely to hold its own, for the Orchid-houses have been built of the best possible kind, fitted with modern appliances. The gardener, Mr. Alex. Hay, is a diligent, practical man, who evidently loves his calling and his charge. In the houses, whether cool or warm, a healthy atmosphere is noticeable, which a glance at the arrangements of the houses sufficiently accounts for.

which has been called *Cattleya labiata* Balliana, for it is difficult to decide definitely to which section of *C. labiata* it belongs. It is, however, a very pretty and distinct form with pure white sepals and petals, and light-orange disc to the lip, the anterior portion of which has a slight tinge of pink. With the *Cattleyas* were arranged good forms of *Lycaste Skinneri*, *Cymbidium eburneum*: fine specimens of *Dendrobium densiflorum*, *D. thyrsiferum*, *D. Phalaenopsis*, *D. Findlayana*, and other *Dendrobiums*; *Miltonia vexillaria*, *M. Phalaenopsis*, &c.

In the large *Dendrobium*-house were in bloom the latest of the *Dendrobium nobile*, of which there is a very fine collection, two of the best and most distinct being the true *D. nobile nobiliss*, and the bluish-white *D. n. Balliana*. Also in flower were *D. × Schneiderianum*, *D. × Aspasia*, *D. Juteolum*, *D. Findlayana*, *D. Devoniana*, and many fine specimens of *D. Phalaenopsis Schroderianum*. Near the glass end of the house and in a position where

Philippino Islands. After having at first collected some plants which bore no flowers, but which revealed a novelty by their habit, he was suddenly abandoned by the prisoners who had been given him as an escort. 'I was then obliged,' writes M. Roebelen, 'to descend to the plain, and after a somewhat lengthy palaver with the chief of the tribe, he consented to supply me with any number of carriers, provided I handed over everything in my possession, and particularly my umbrella, which he wanted for his wife.

"I set out the same day about 10 A.M., and at 6 P.M. reached the dwelling of a transported Spaniard, who cultivated a few Cocoa-trees around his miserable hut. I remained with him some days, in order to pack my plants, and it was he who accompanied me the first day in his little boat, having no servants at his disposal. On landing in the evening, I saw at the top of a tree some flowers, which appeared to me to be those of a *Vanda*, and some minutes afterwards,



FIG. 101.—*CATLEA SYRINGIFOLIA* AT HEYWOOD, WESTBURY, WILTSHIRE.

In the first place, the natural earth forms the floor, and over this are neat and durable wood-work trellises extending the whole width of the paths. This arrangement is the best possible for Orchid-house flooring, and if in houses where the baneful concrete-floors still exists were removed and the natural earth with trellis over substituted, immediate good results would be secured. Secondly, the houses are not painted, but the wood-work is simply coated with some preservative; and thirdly, the houses are fitted with the lath roller-blinds running well above the glass, and thus admitting a maximum of clear light without fear of scorching by the sun's rays. With these and many other sanitary arrangements, Mr. Ball has secured a model block of Orchid-houses, with the result that his plants are in splendid condition in every department.

In one house used for arranging together some of the larger species when in flower, we found a very fine display made up of well-flowered examples of *Cattleya Schroderae*, *C. Schroderae alba*, and other *Cattleyas*, among which was a very handsome variety

they could feel the influence of the outer air, some fine specimens of *D. Falconeri* were flourishing. On several occasions we have seen this plant, which many growers utterly fail satisfactorily doing well in a similar position.

The *Cattleya*-house contained a good collection of *Cattleyas*, together with *Epidendrum Wallisii* and other species; the *Cypripedium*-house a rare and valuable selection, including *C. callosum Sanderi*, *C. Lawrenceanum Hyeanum*, and *C. insignis Sanderi*. In bloom were the handsome *C. × triumphans*, and other hybrids and species.

The cool-houses had a good show of *Odontoglossums*, *Mesdevallias*, &c., all in the best possible condition. *J. O'B.*

VANDA SANDERIANA.

"M. Roebelen, to whom the honour of discovering this brilliant species (*Vanda Sanderiana*) belongs, has related, in the *Journal des Orchidées* for 1894, the conditions under which he procured it, towards the end of 1881, in the neighbourhood of Davao, in the

sight of the very palpable protestations of the ants which disputed my right to the plant, I held the beautiful *Vanda* in my hand. All my miseries and all my fatigues were at that moment forgotten. It is necessary to have travelled in order to realise the joy experienced at the discovery of a new plant, and that such an one as *Vanda Sanderiana*. The little plant had three stems and forty-two flowers." *Lindleya*, t. DLXVII.

CATALPA SYRINGIFOLIA.

We are almost as familiar with the *Catalpa* as with the Horse-Chestnut, but, in both cases, familiarity does but enhance our estimation. The *Bignoniaceae*, to which group this tree belongs, are mostly climbers, but the members of this particular genus are trees—natives of the United States and Japan. The species first introduced was the one, an example of which is figured on this page. It made its appearance originally in 1726, and its noble foliage and showy flower-panicles soon brought it into favour;

moreover, it forms an excellent town tree, and may, or might recently have been, met with in the enclosures of the Temple and Lincoln's Inn. The specimen figured is in the garden of Lord Justice Lopes at Heywood, Westbury, Wilts.

A specimen 40 feet in height, and 170 feet in circumference of the head, is to be seen at Thorne Hill Park, Bitterne; and another large specimen was figured in our columns in January, 1876.

NOTE ON AMERICAN ERYTHRONIUMS.

Mr. R. WALLACE, of Colchester, has lately brought me five living plants of an Erythronium I was very pleased to see. It has flowers as large and peduncles as tall as in *E. giganteum* (*Bot. Mag.*, t. 5714), but the flowers are bright mauve-purple instead of creamy-white. The leaves are conspicuously mottled, and the style distinctly tricuspidate, with three falcate stigmas. It agrees with *E. revolutum* of Smith, described in 1819 in the thirteenth volume of the *Cyclopaedia or Universal Dictionary of Arts, Sciences, and Literature*, edited by Dr. Abraham Rees, F.R.S., F.L.S. This plant was collected by Menzies in Vancouver's Island, and was the first Erythronium described from Western America. Hooker, in his *Flora Borreali-Americae*, called it *E. grandiflorum*, Pursh, var. *Smithii*; but in point of fact *revolutum* is an earlier name than either *grandiflorum* or *giganteum*. There is in the *Kew herbarium* one of the original specimens gathered by Menzies, and with this Mr. Wallace's plant entirely agrees. When Smith described *E. revolutum* in 1819, only three species of the genus were known, *Deocanis*, *americanum* (which, as it was not the only American species, he proposed to rename *flavum*), and *revolutum*. When I monographed the genus in 1873, in the fourteenth volume of the *Journal of the Linnean Society*, five species only were known. Since that date the American species have been studied very carefully by the botanists who lived amongst them, and one of the last papers written by the late lamented Dr. Sereno Watson was a new monograph of the genus, published in 1891, in the eighteenth series of his contributions to North American botany, in the twenty-sixth volume of the *Proceedings of the American Academy of Arts and Sciences*. He does not seem to have been acquainted with the genuine *E. revolutum*, but describes an *E. revolutum* var. *Bolanderi*, to which the plant now cultivated by Mr. Wallace and others, under the name of *E. Smithii*, seems to belong. The following is a classified list of the American species as they now stand:—

Group I.—Eastern species. Scapes short, always one-flowered. Inner petals not crested.

* Offshoots produced from the base of the stem.
1. *E. americanum*, Ker., *Bot. Mag.*, t. 1118. Flowers yellow, often tinged with purple, and finely dotted.

2. *E. albidum*, Nuttall.—Flowers white, with more or less of a bluish or purplish tinge.

3. *E. mesochlanum*, Koerr.—Very near the last.

** Offshoots produced from the sheathing portion of the base of the scape.

4. *E. propullans*, A. Gray.—Flowers small, rose-coloured, with a yellow base. Southern Minnesota and South Ontario.

Group II.—Western species, with usually tall scapes, and inner petals with prominent gibbosities at the base.

* Style distinctly tricuspidate.

5. *E. grandiflorum*, Pursh., Lindl., *Bot. Reg.*, t. 1786.—Leaves not mottled. Flowers bright yellow, 1½ to 2 inches long. Idaho, Washington, and British Columbia. *Gardeners' Chronicle*, June 27, 1874, p. 831.

Var. *E. Nuttallianum*, Regel, *Gartenbogen*, t. 6951; now R. and S.—Scape shorter. Flowers rather smaller. Northern Utah to British Columbia, more common than the type.

6. *E. Hartwegii*, S. Wats.—Leaves mottled. Flowers one to three to a scape, 1 to 2 inches long, pale yellow, with an orange base. Sierra Nevada of

California. See *Gardeners' Chronicle*, 1896, xx., p. 361.

7. *E. revolutum*, Smith.—Leaves mottled. Flowers bright mauve-purple, 1½ to 2 inches long. British Columbia.

8. *E. Johnsoni*, Bolander.—Flowers bright purple. Southern Oregon. *Gardeners' Chronicle*, 1896, xix., p. 549.

9. *E. Bolanderi*, S. Wats.—Flowers white, with a yellowish centre, 1½ to 2 inches long. California, in the Sequoia region.

10. *E. giganteum*, Lindl., *Bot. Mag.*, t. 5714.—Scape tall, one to six-flowered. Flowers white, with a bright yellow or orange base, 1 to 1½ inch long. Lower Columbia, southward to Sonora and Mendocino Counties, California. *Gardeners' Chronicle*, 1894, xv., p. 621.

11. *E. montanum*, S. Wats.—Near the last, but more or less abruptly contracted or rounded at the base. Flowers white, with an orange base, often drying pinkish. High Mountains of Washington Territory and Oregon.

** Style not tricuspidate at the apex.

12. *E. citrinum*, S. Wats.—Scape three-flowered. Flowers light yellow, with an orange base, their tips becoming pinkish. Southern Oregon.

13. *E. Hentersoni*, S. Wats., *Bot. Mag.*, t. 7017.—Flowers purple, with a dark purple and yellow base. Southern Oregon. *Gardeners' Chronicle*, 1888, liii., p. 193.

14. *E. purpurascens*, S. Wats.—Scape one to eight-flowered. Flowers, ¾ to 1 inch long, light yellow, with a purplish tinge, deep orange at the base. Sierra Nevada of California.

15. *E. Howellii*, S. Wats.—Scape one to three-flowered. Flowers pale yellow, with an orange base, becoming pinkish. Southern Oregon. *J. G. Baker*.

GARDENERS' FRIENDS.

The Song thrush.

By HARRISON WEIR. (COPYRIGHT.)

THE SONG THRUSH, *throstle, mavis, grey-bird* (*Turdus musicus*), if not the finest, is one of the finest of English songsters, all things considered, not the least of which is the length of time that he is "in song." Perhaps no other song-bird is better known among our British birds, nor more universally admired. With few exceptions, one of which is the robin, no bird sings so continuously as the thrush. Early in the spring, late in the autumn, and even in winter, when the ground is covered with snow, ever and anon his voice may be heard, strong, loud, sweet, and musical. Though, of course, there is a great similitude, still there is much difference in the arrangement, and in the number and variations of the voice, the sweetness of tone, and the general harmony, which may be noted by the close observer. In some the voice is very loud and shrill, while in others [many of the cadences are supremely soft, rich, and enjoyable. To none possibly is this better known than to the professed "bird-fancier." As one of these very quaintly remarked to me many years ago—"Some birds, sir," he said, "are worth their weight in gold, some a pound, some a shilling, and some not worth a song." At the present time, there is a remarkably fine songster that sings in a tall tree standing in my garden, early and late it affords me very great delight to listen to the various changes and complications of voice in which he constantly indulges. The thrush is a very early riser; as soon as it is light, or, I may say, ere daylight begins, he is out and about, and it is quite necessary that he should be, for he is one of those birds that not only wants, but gets, the proverbial "early worm." When it has been almost too dark to see distinctly the actual form of things, I have noticed the thrush and the blackbird peering about, with curious eyes, on the grass plot. A few hops, and the head descends; a quick succession of smart tugs, and out from his muddy hole is drawn a worm. It is dashed down, the bird looks at it, puts his foot on it, a tug or two, then more observations;

again and again the worm is dashed down, "thrown up, dashed down," and then a jerk, and it is gone. Another or two is sought for, found, killed, and swallowed. Then, perhaps, a snail, and breakfast is done. The thrush looks about, flutters his wings to shake off the dew, takes a few hops among the wet grass to clean his feet, and after cleansing his bill by transverse action on the wet grass, he mounts into a tree, then higher and higher, until he nearly or quite reaches the topmost bough, when he bursts forth into glorious song, "bidding the sun good-morrow." After a while, he again descends, more food is searched for; but in about twenty minutes he is up again, and there is a flood of far-reaching harmony. By this time, many other insect-eating birds are awake, and the "early worms" have a sad time of it. But the thrush is mute, and he descends among the boughs, and he will, after taking a little more food, compose himself for a short nap, when he suddenly awakes, looks about sharply and quickly, shakes himself, then away to some water—the edge of a pond or sandy side of a stream—and soon he will commence his ablutions, and after getting thoroughly wet will recline on his side, with one wing raised, and bask in the sunlight, enjoying the warmth, and also the comforts of cleanliness, then off and away to other feeding-grounds, and for other kinds of insect-food. If it is the breeding season, and the hen is not sitting, she is generally close at hand, and sometimes the cock-bird will look for and put before her one of his best finds in the way of worms. The snails are taken to a particular stone, and then Master Greybird hammers off the shell, and with the look of a gourmet—"he feeds." The thrush seems to remain paired during the greater portion, if not the whole, of the year. I have certainly seen them so, late in autumn, and very early in spring, as well as in summer. The hen much resembles the cock, though less bright in colour; this varies so very much, that in some districts or localities a hen bird may be brighter in colour than cock birds in others. Having been one of the judges at the Crystal Palace bird shows for many years, I have had ample opportunities of comparing different birds of much excellence in every way, and it has been a matter of deep interest to me to observe the varied forms and tints of brown and orange there shown—some having the spots on the breast black on a white ground or ash colour, others deep chocolate on an orange ground, the other parts corresponding. Some are large, and thickly made, others slim, and finely formed, with colours of great richness. While on the subject of markings and colour, it will not be out of place to say that on one occasion I had a nest of young thrushes offered, the whole of which were entirely white. I have also seen fawn coloured specimens; and for some time there was one in my garden that was much spiced and marked with white. The white birds show the spots and markings by the different formations of the web of the feathers in the same way that the spots are clearly visible on the tail of the white peacock.

A few years since, when with Mr. R. D. Blackmore, the author of *Lorna Doone*, who, besides being so talented a novelist, is also a great bird-lover, and a close observer of Nature, he informed me of a very curious thrush, of the ordinary colour on the back, head, and tail, but the breast was a light ash tint, without any spots thereon. It was not in confinement, but in common with others and some blackbirds. It was very tame, coming to be fed from the hands of Mr. Blackmore. This is the only specimen I ever heard of without spots on the breast, the other parts being of the usual colour. He also mentioned some curious blackbirds, to which I may refer subsequently.

The thrush breeds very early in the year. I was informed in March this year of a nest with five young ones, and have known of nests and young at the end of February. The nest is built of dried grass roots, and moss, lined with clay. The eggs are generally a bluish-linen green, spotted sometimes heavily at one end with black, at others lightly all over; and I have seen them quite blue, without a spot, in the same nest with others spotted or lightly marked.

COLONIAL NOTES.

NEW HEBRIDES.

I enclose herewith for your examination a specimen of *Agathis obtusa* (Dammara), with male catkins (fig. 103, p. 301), a species that is not likely to be common in collections. It was obtained on the island of Aniteum, New Hebrides, where a saw-mill has been in operation for some years, though, from all accounts, at a pecuniary loss, attributed by many to the company sending out imperfectly seasoned timber. The humid climate, however, may have some influence in retarding the seasoning. Unfortunately, I did not secure any female cones. There seems to be a good deal of difference of opinion among systematic writers as to the number of species of *Agathis*. The shape of the leaves does not appear of a reliable character, as those of a tree in the Sydney Botanic Garden are larger, less stiff, and less rounded at the apex than those of the specimen sent you, while the latter show among themselves a tendency to form a point. I enclose also a photograph of one of the largest of the trees (fig. 102), which measured 23 feet 9 inches in girth at 5 feet from the ground.

[Of this species, formerly known as *Dammara obtusa*, Mr. C. Moore writes: "The habit of this species, and of that found upon Vanikollo, is very similar to the *Kaurie* of New Zealand. In whatever situation I found them, they were invariably the monarchs of the forest; the stems of all three are robust and erect, throwing out branches from 30 to 40 feet from the ground, the branches spread out considerably, but all have a stiff, rigid appearance."]

It was at the suggestion of the late Baron Von Mueller that I went last winter to the New Hebrides to collect botanical specimens. The Baron thought new species might be found on the summits of the hills on these islands. Specimens were obtained up to 2700 feet elevation above sea-level, but a preliminary examination, as far, at least, as the genera are concerned, made at the Melbourne Herbarium, with the help of Mr. Luehmann, who has succeeded the late Baron there, seems to point to the conclusion that the flora of the group is chiefly composed of plants derived, probably, from the other islands of Oceania and from Eastern Australia.

Fromanga and Efaté were examined, but the higher mountains on the more northern islands may possibly yield greater novelties. *Alex. Morrison.*

MANCHINEEL (*Hippomane Mancinella*, L.).

The fruits or Apples of the deadly poisonous Manchineel are now (April) seen strewn along our seashores—Grenada—in great quantities, and also floating about on the surface of the sea to be drifted in the course of time by currents of the Carribean Sea, and cast ashore on distant islands and countries. But long ere they reach their goal, the fleshy portion of the fruit will have either rotted away by the action of the salt-water or been nibbled by fish, leaving but a skeleton-like shell, wherein lie the few small seeds. Mr. Lunt, of the Trinidad Botanical Department, when recently engaged upon the successful rediscovery of *Saccoglottis amazonica* in Trinidad, gave it as a fact from observations made by himself last year, that bats were the agents that reduced the famous drift fruit to its skeleton condition by their feeding off the fleshy portion of the fruit. The Apple of the Manchineel is very much like the wild English Crab Apple of English copses in shape, size, colour, and smell, and sailors in their wanderings have often suffered through this similarity, not knowing the danger of this deadly sea-fruit, and in some cases their eating of it has caused death. In cutting any portion of the tree, a virulent white milk flows out, and if by chance it settles on the skin blisters it, and sores will follow within a day or two after. Salt-water, which is always near by, is said to be an antidote. This is hardly my experience, for I found upon one occasion in particular, that, although I bathed in the sea shortly after getting a little of the milk on my body, the blisters and sores appeared 7 or 8 days subsequently. Some of our people before planting their Indian Corn seed (Maize), usually put it into a calabash, and gashing the bark of a large

Manchineel tree, allow the milk to drop over the corn so as to prevent rats eating the grain after it has been sown, for, as elsewhere, rats are among our many pests. The drift-seeds met with upon our shores are chiefly *Saccoglottis amazonica*, *Mancinella saccifera* (the sea Gracilla), *Terminalia catappa* (Almond), and the Manchineel. *W. E. Broadway, Grenada.*

LOCAL DESIGNATIONS.

"We are unhappily flooded with local designations, made up by anybody, anyhow, and applied in the loosest way, quite haphazard. Does a native Cape plant come into notice for good or for evil? The chances are that someone calls it by the name of some

In the next division, *Tarconanthus*, a composite little tree, is "*Wilde Salie*," in virtue of its having a crinkly, rugose leaf. Elsewhere a similar sort of foliage earns the title for *Buddleia salviaefolia*. And it becomes a little perplexing to have to correspond and explain on the basis of these names about the presumed medicinal virtues of, say, *Wilde Salie*, which may be any one out of the three. The writers argue each for the absolute correctness of their nomenclature, and resent being told what *Salie* is, and what a *Thistle* ought to be. They have heard the plant so called from their youth up, therefore it is correct, and all other names are wrong." *Report of the Government Botanist, Cape of Good Hope.*



FIG. 102.—*AGATHIS OBTUSA* IN THE FOREST OF ANITEUM.

(From a photograph by Mr. Morrison.)

perfectly different English plant. This is thought to be giving it an English name, and making it easily recognisable by English people. The resulting confusion is distracting. A Mexican Poppy (*Argemone mexicana*) springs up on the spoil-heaps at Kimberley from a chance seed, and increases so fast as to become a nuisance. It is feebly prickly, hence is dubbed by some careless person a "*Thistle*." The next man calls it a "*Scotch Thistle*," imagining that Scotland has a monopoly of these things, and that every *Thistle* must be Scotch. Next, the ridiculous misnomer gets upon the minutes of municipal boards and divisional councils concerned in a crusade against weeds. After that the chances of the Poppy holding its own are few and small—it becomes a Scotchman naturalised by force. With local names in the "*taal*" of the country the case is much the same. In one place, the appellation "*Wilde Salie*," is quite properly applied to *Salvia clandestina*, a true Sage.

THE ROSARY.

A FEW REALLY GOOD NEW ROSES.

ALTHOUGH somewhat late in the season for planting Roses, from the fact that almost all of our newer and scarce varieties are grown in pots, and can, consequently, be planted out at any time of the year, one may still add any or all of the following to their collections. There are a great number of new Roses, but I propose to confine myself to six from each of the three chief classes, viz., the Hybrid Perpetuals, Teas and Noisettes, and Hybrid Teas.

Hybrid Perpetuals.—*Bladun*, a magnificent bloom during a cool and dry season, the flowers of much the same form as in *Mdlle. Bonnaire*, but in every way twice the size. The colour is a silvery-white, with a delicate pale blush in the centre; particularly good in the autumn. *Laurence Allen*, a very promising

new Rose, somewhat resembling in habit and form *Duroc's* Rothschild and Spenser, but having greater depth of colour and a better form. I know of no Rose with a more agreeable fragrance, which in itself is a great recommendation, especially among pink Roses, a class that is peculiarly deficient in this respect. Mrs. Rumsey is another fine addition to pink Rose, very free blooming, each flower borne upon strong shoots, the foliage of an intensely green tinge; it has the merit of being mildew proof. Helen Keller, a variety which gained the National Rose Society's Gold Medal, has blooms of ideal shape, fair size, and distinct colours, a bright rosy carise; the plant grows with vigour. Elfen Draw is a sport from *Duchess de Morny*, possessing the good characters of that splendid Rose, differing only in being a light silvery pink, with peach shadings; all rose-growers will recognise its value.

larger, fuller, and brighter. *Beauté Lyonnaise* is white, upon a slightly yellow-tinted ground, very large and full. *Alice Furon*, a large globular flower, yellowish-white, correctly described as an improved *Gloire Lyonnaise*; the beautiful dark green foliage keeps clean and handsome throughout the season. *Charlotte Gillemot* is a distinctly imbricated blossom, with large, thick petals; colour clear, French white, described by some as clear ivory-white—a really good new Rose.

Teas and Noisettes.—*Muriel Graham* is a sport from *Catherine Mermet*, which has already given us several valuable additions, in *The Bride*, *Waban*, and others. The only distinction is, that it is a very pale cream, slightly flushed with rose; and we do not find it quite so full, as a rule, as the majority of *C. Mermet* blooms, but some grand examples occasionally appear. *Bridesmaid* is another sport from *C.*

more that are well worth growing, but I believe the above eighteen to be the pick of those sent out in 1895, 1896, and 1897. *Maman Cochet*, Mrs. W. J. Grant, Marchioness of Downshire, and others from their respective classes, were distributed one year previous to those named in my list. An exception is made in Mrs. R. G. Sharman-Crawford, on account of its extra sterling qualities in a class where really good new Roses have been scarce of late years. A. P.

MUMMY ROSES.

From the *Compte-rendu* of the Séance of Nov. 10, 1885, of the Société Royale de Botanique de Belgique, we abridge the following account of the remains of Roses found in the tombs of the necropolis of Arsinoë of Fayoum (Egypt). The writer, M. François Crépin, mentions that, in the previous June Dr. Schweinfurth sent him word from Cairo of the discovery of Roses in Egyptian tombs, and that these fragments had been sent to London. It was from Professor Oliver that some specimens were sent him from Kew for examination. These samples included nine flowers on their stems, the petals were fallen and mixed with the stamens and anthers. All nine flowers came from the same variety or species.

So far as could be judged from such imperfect specimens, their closest affinity was with a Rose cultivated in Abyssinia, in the Tigis province, around churches or other religious buildings. Specimens of this Rose, gathered by the French travellers *Quartin-Dilhot* and *Petit*, had been described by *Ach. Richard* under the name of *Rosa sancta*. *Richard* stated that *R. sancta* resembled *R. centifolia* in appearance, but differed by its glaucous, glabrous, and glandless branches, furnished with a small number of slender and curved thorns, and by its much smaller flowers. The resemblance traced by *Richard* appears warrantable by the fact that *R. sancta* seems to belong to the *Gallica* section. It is probably a variety of *R. gallica*, and not a native of Abyssinia, but a cultivated form introduced into the country many years ago. So far, among the many varieties of *R. gallica* now grown, no form is exactly like that of *R. sancta*.

To return to the Rose from the Egyptian tombs, which seems more nearly to resemble *R. sancta*. There is reason to suppose that it came from plants cultivated in Lower Egypt, and perhaps even from near the locality where it was discovered. The Egyptians cultivated Roses largely, and supplied them to Rome during the winter previous to the invention there of greenhouses. This mummy Rose is no more indigenous to Egypt than is *R. sancta* to Abyssinia. It might have been imported from Italy, Greece, or Asia Minor, where *R. gallica* is indigenous. Egypt has no indigenous Roses, the nearest place to find them being the Abyssinian mountains, where grows *R. abyssinica*, a variety of *R. moschata*.

Dr. Schweinfurth comments upon the interest of these comparisons. Mr. *Flinders Petrie* showed him some fragments of Roses which he had found in the necropolis of the town of Arsinoë, Fayoum, near the pyramid of the Labyrinth, and which were strung on a ring like a thin garland of the first and second centuries after Christ. These were the same tombs wherein were found certain interesting portraits in coloured wax. [Messrs. Paul & Son, of Cheshunt, have plants of *R. sancta* in their nurseries. Eo.]



FIG. 103.—MALE CATKINS AND SHOOT OF AGATHIS OBTUSA. (SEE P. 300.)

Mrs. R. G. Sharman-Crawford is another grand Rose. Once I described it as being likely to rival Mrs. John Laing very closely, and lately I have more than once written that some persons prefer it to that beautiful variety; it is quite rose, with a distinct form and colour, of good habit, very free blooming, a deep silvery pink, with flesh shadings outside. All of the above six were raised in this country.

Hybrid Teas.—*Majorie* is a free and compact grower, one of the best Roses for cultivating under glass, every flower coming perfect in form, but in size rather small, according to the present-day standard; the colour is a soft creamy-white, suffused with salmon-pink, and it is a very floriferous variety. *Antoine Rivoire*, one of the grandest hybrid Teas we have as yet received from Messrs. *Pernet Ducher*, a plant of a vigorous habit, free flowering, of large size, good form, rosy flesh shade, with yellow ground, and bordered with carmine; a particularly striking bloom, and one that is sure to please. *Clara Watson*, a good grower, deep salmon and pink shade, after the style of *Souvenir de Paul Neyron*, but much more reliable,

Mermet, of a deeper colour than the parent form. Occasionally a flower of the type comes equally bright, but *Bridesmaid* may now be considered a fixed sport. *Sylph* has a flower with a high centre, and large stiff petals, slightly tinted with violet and peach. The bush is a good grower and a free bloomer, especially when grown under glass. Mrs. *Pierpont Morgan* is a very bright, larger, and altogether improved form of *Madame Casin*. It has been good here; and we also have such high authority as that of *Dean Hole* respecting its great usefulness and beauty in the United States, from which it was distributed. *Souvenir de Catherine Guillot*, although not yet seen sufficiently large and heavy for the exhibition-box, is a beautiful and distinct Rose; a yellow ground, tinted with carmine and orange-red, quite a unique combination among Roses. *Fiametta Nabonnand* originated from crossing *Niphetos* and *Papa Gontier*, the result being a long-petalled flower, white, tinted with carmine—a very pretty bloom, and owing to its free-blooming and excellent growth one that is sure to be much liked. It would be easy to name several

TREES AND SHRUBS.

CYTISUS PRÆCOX.

ALTHOUGH, curiously enough, mention of this Broom has been omitted from nearly all the popular works of reference, there is none among the early-flowering *Cytisus* which better deserves cultivation. It is a hybrid obtained by crossing *C. albus* and *C. purgans*, but by whom or at what date the cross was effected, I have not been able to ascertain. It has been in existence for more than twenty years, at any rate. It commences to flower in mid-April, about the same time as *C. purgans*,

but is considerably in advance of the other parent — *C. albus*. It is a shrub of graceful habit, producing a mass of slender, wiry shoots, sparsely furnished with simple linear leaves, half an inch or so long, and covered with a silky pubescence. The branches made last year are now covered with sulphur-coloured flowers in a profusion scarcely equalled by any other *Broom*. It is now a conspicuous feature at Kew, several large masses of it being in full flower. If it has one drawback—it is the powerful and none too pleasant odour of the blossom. It ripens seeds freely, but only a small proportion of them come true; some revert more or less to the golden-flowered *C. purgans*, the majority simply producing *C. albus*. It can best be propagated by putting in cuttings during August in very sandy soil, under a bell-glass, in some sheltered corner, or in an unheated frame. The plants should frequently be shortened back when young to get an abundance of branches near the ground, and thus delay as long as possible the lanky character it eventually assumes in common with all the taller *Cytisus* and *Genistas*.

CYTISUS ARBOREUM.

This is the earliest of the dwarf semi-prostrate species of *Cytisus* to burst into bloom, and it is now covered with its rich golden-yellow flowers. As a plant for the rock-garden, or for furnishing the ground beneath taller shrubs, it deserves special notice. We use it in both these ways, and in the latter case it is planted in a bed beneath some *Caragana*, whose thin foliage admits sufficient sunlight to allow it to thrive. This is a point to be remembered, for it is by no means a shade-loving plant. It rarely grows more than from 6 inches to 12 inches high, its tiny trifoliate leaves being downy, and the leaflets ovate. Although Mcgrigge was not the first to discover it, he was the first to bring it into notice by figuring it in his *Flora of Mentone* in 1871. It was found by him at the top of Mont Cima d'Ours near Mentone, to which, along with two other mount in summits near that town, he states that it is confined in a wild state. It is rarely found bearing seed in its native home, owing to the continual nibbling of the shoots by animals, which perhaps explains its rarity as a cultivated shrub. It can, nevertheless, be recommended as one of the most beautiful of its class, being perfectly hardy, and valuable as flowering so early as April.

BERBERIS STENOPHYLLA ×.

The work of the hybridiser amongst hardy shrubs has produced many beautiful things, but in none perhaps has his ideal—which is the production of a plant distinctly better than its parents—been so notably achieved as in this *Berberis*. It is a cross between *B. Darwini* and *B. empetrifolia*, and was first sent out, I believe, from the well-known Hands-worth nursery of Fisher & Holmes. So distinct is it, that doubts have frequently been expressed as to its origin, but there is sufficient proof of this in the fact that it rarely comes true from seed, reverting generally to *B. Darwini*, and occasionally to *B. empetrifolia*. At the present time it is one of the most beautiful shrubs in bloom. The long arching branches, thickly set with linear, mucronate leaves, half an inch long, and of the deepest green, are now transformed into wreaths of rich yellow blossom. Some of the shoots are 2 feet long; the nodes are half an inch apart; and as ten or a dozen flowers are produced at each node, some idea of its free-flowering nature may be conceived. Not only is it a much more graceful plant than *B. Darwini*, but it is also harder. I have never seen it damaged in the slightest degree, even by the severest of frosts in the London district, which is more than can be said of Darwin's *Berberis*.

PYRUS FLORIBUNDA.

This is the proper name for what is commonly known as *Malus floribunda* and *Pyrus malus floribunda*. Along with *P. spectabilis* it is the loveliest of the numerous *Pyrus* now in bloom. Of many glorious shrubs we owe to Japan, there are few that

can claim a greater share of our admiration and care than this. Just now, when half its myriad pendent blossoms are open, and the other half still in the bud-state, its beauty, perhaps is greatest; for the open ones are of a soft pale rose, whilst intermingled and contrasting with them are the jewel-like buds, whose unfolded petals are of a deeper, richer hue. There are now several varieties of this *Pyrus* in cultivation, the finest of which, probably, is *atro-sanguinea*, whose flowers, even when fully open, are of as rich a rosy red as the buds of the type. The double-flowered variety (*dore-pleno*) is generally called *P. Parkmanni* or *P. Halleana*; it may possibly be a hybrid between this species and *P. spectabilis*. The shrub sent out from the Continent under the name of *P. Schiedackeri* is also a form of this species. W. J. B.

NURSERY NOTE.

CINERARIAS AT FARNHAM ROYAL.

ANTHONY reference to these beautiful spring flowers becomes an all-the-story, yet it is impossible to see them in all their variety, numbers, and effectiveness as I saw them recently, without feeling that they merit all possible publicity. The collections of several dozens of plants sometimes seen at the Drill Hall, always make their mark, and attract full attention; but at Farnham Royal I saw but the other day enough of plants, all of about the same dimensions, and all in 6 inch pots, to quite fill the Drill Hall, and if so exhibited they would constitute a splendid show. It is better to see the collection when all the diverse hues of colour are selected and grouped, for the big masses of hundreds of plants produce a fine effect. Altogether there were some 2,800 in all in full bloom, probably the largest, as also the best, collection of the garden *Cineraria* in the kingdom. There are blocks of pure white, and grand blooms too; cerise, magenta, red, deep red or crimson, purple, blue in shades—some light, and some very deep and rich. Then come batches of plants with edged flowers, the margins being generally broad and striking. This is a peculiarly effective section, the heavy hues being so pleasingly lit up by the white centres or rings. There are at this time of the year in greenhouses few floral sights which so well repay a visit as do the *Cinerarias* which Mr. W. James has this season. I noticed that he has a break from crossing *Cinerarias cruenta* and *lanata*, the plants about 18 inches in height, and some of these show a pyramidal branching form that is distinct and pleasing. A. D.

THE WEEK'S WORK.

THE KITCHEN GARDEN.

By W. POPE, Gardener, Highclere Castle, Newbury.

Brussels Sprouts.—This vegetable is in most gardens one of the most important autumn and winter crops, and the time has arrived when good breadths of those plants that were raised from seed sown inside may be got out. In most south country gardens the plants that were sown and forwarded under glass for a time will have been already planted, and will be making progress. Let the ground be stirred frequently with the hoe, and as the stems lengthen, afford them a slight earthing-up, which will steady them, and prevent wind-waving. In some much-exposed gardens it is advisable to place a stake to every plant, securing them with broad bast ties. The most suitable quarter in the kitchen garden for the main crop is that which is of good depth, has been heavily manured, and deeply trenched, and that has not carried a crop of the Cabbage tribe for two or three years. If the land be not firm, it must be made so by tramping it, a loose soil invariably meaning loose, soft sprouts. Let the plants stand from 2 to 2½ feet apart each way, according to the nature of the soil, or the size to which the varieties grow, on strong land the wider distance being advisable for all. For affording a late supply of plants, seeds of a good strain of imported or the Covent Garden variety may now be sown.

Savoy and Kale.—Seed may now be sown of Dwarf Curled and Drumhead Savoy, and any of the small early varieties that may be deemed desirable. For small gardens the Tom Thumb and Early Ulm Savoy are useful ones, as they can be planted thickly, and on the score of good quality they leave nothing to be desired. Sow thinly, and do not allow the plants to become crowded in the seed-bed before planting out. Of the varieties of Kale, none is more generally useful than the Curled Scotch, especially the dwarf form of it, with the Jerusalem or Asparagus Kale for late use. [Those who have ground to spare should sow the Braganza Cabbage, Couve Tronchuda. It is not very hardy, but it is delicious eating, and can be had in perfection up to December. Ed.]

Tomatoes for Planting Out-of-Doors.—These should now be in a cool-frame with plenty of air afforded by drawing off the lights entirely on bright days. Secure each plant to a stake, and avoid crowding. When planting, press the soil very firmly about the balls, and afford water carefully till the roots have taken possession of the new soil. Remove the lateral shoots as fast as they appear, keeping the plants to one stem.

Vegetable Marrows and Ridge Cucumbers.—Plants raised in heat, but grown lately under somewhat cooler conditions may now be put into their summer quarters. A mild hot-bed is requisite to give them a good start, and they should be covered for a time with hand-lights, or some form of glass protection, and night-coverings afforded for a few weeks. Seeds may now be sown under the same conditions if plants from early-sowings are not available, a brisk bottom-heat and top protection being required.

Turnips.—Thin the out-door Turnip crop as soon as the plants are large enough to handle, leaving them a little closer than is desirable for a crop, and thinning finally a few weeks hence; or they may be thinned out into clumps with the hoe, and thus left in bunches 8 or 10 inches apart, the surplus plants being pulled out after. Dust the plants over with fresh soot, or soot and lime, or spent Hops, as a means of scaring the Turnip-fly. When sowing after this date, apply a little superphosphate of lime in the drills with the seed, it will accelerate growth, and help to push on the plants at that stage when the fly is most troublesome.

THE FLOWER GARDEN.

By CHARLES HERRIN, Gardener, Drogheda, Maidenhead.

Dahlias.—Plants recently struck in small 60-sized pots should be given a shift if likely to become unduly root-bound, as another fortnight must pass before it is safe to plant these out in the borders. Remove the lights in warm weather from the frames in which they are standing. Old roots that are merely split up before planting, and have been kept almost dormant up to the present, may be put out about the middle of the month. These will furnish useful flowers in quantity, but the newly-propagated ones will give the best. A mulch of rotten manure is advisable for Dahlias after planting, and especially so if the soil is of a light nature. For garden decoration the free-flowering Pompon varieties are most telling, and several together of one variety producing masses of colour have a better effect than too many colours. The following are six good Pommpons, White Aster, white; Isabel, bright orange scarlet; Thebe, deep golden orange; Mars, bright scarlet; Verisa, soft silvery-rose; and Douglas, deep maroon. For use as cut flowers no section is equal to the true *Cactus* type, these having the advantage over the single varieties of lasting longer in good condition. In the garden, perhaps, their worst feature is that they fail to throw the flowers well above the foliage, but by a system of disbudding this may in some measure be avoided, and those most subject to this failing should be omitted. The following comprise some of the best for general purposes. Of new ones, Mrs. Wilson Noble, pinkish salmon, free; Mrs. Francis Fall, white; Harry Stradwick, dark crimson-maroon; Mrs. Barnes, pale primrose, tipped pink; Harmony, reddish-brooze, yellow centre; Mrs. Montefiore, crimson scarlet; Fusilier, salmon pink. Good older varieties are, Bertha Mawley, cochineal colour, very free; Delicata, soft pink; Matchless, velvety maroon; Lady Penzance, sulphur yellow; Gloriosa, bright red, rather tall grower; Ernest Cannell, red; Mrs. A. Pearl, creamy white; Mrs. Turner, deep yellow; Robert Cannell, magenta; Countess of Radnor, delicate salmon; and the old Jazzeit, bright crimson.

Alpine Auriculas.—These pretty spring-flowering plants are useful for small beds or borders, and seeds

may be sown now for raising plants to flower next year. From a packet of good seed a great variety of colours may be obtained. As the seeds often germinate slowly and irregularly, they are best sown in boxes of rather light soil, just covering the seeds, afterwards standing in a cold frame where shade may be afforded until the seedlings appear. The soil should not be allowed to become dry. Old plants may be pulled in pieces as soon as flowering is over, and be dibbled in, in some shady spot; and these will make strong plants for another season, larger than those raised from seeds now.

Primrose and *Polyanthus* may also be raised from seed forthwith, to flower next spring. A shady border or frame on a slight bed will be a suitable position for sowing the seeds, scattering them thinly in shallow drills, drawn out a few inches apart. Any special varieties now in bloom, of which it is desired to save seeds, should be marked, and if possible, isolated from others.

THE HARDY FRUIT GARDEN.

By H. W. WARD, Rayleigh, Essex.

Wall Trees.—The thinning, pinching, and training of young growths upon wall trees require almost daily attention at this season. Especially is this the case in regard to young trees in order to obtain symmetrical well-trained trees that will cover the space allotted to them on the walls, and yield profitable crops of fruit in as short a time as possible. Strict attention must be given to details of a routine character, retaining only as many young shoots of the current year's growth as are absolutely necessary for the formation of the individual trees, rubbing off in the bud state the surplus growths of Peach-trees, and pinching those of Apricots, Plums, Pears, and sweet Cherries not required for the building-up of the trees, back to one well-developed leaf, which will promote the formation of fruit-buds. The points should be pinched-out of any growths which are likely to rob the weaker ones. The young growths that are to be retained should be trained at equal distances on the wall in the manner recommended in a previous Calendar. Young shoots of Peach-trees and the Morella Cherry should be laid in between the several pairs of branches with twigs, taking care not to injure them in doing so. The object should be to encourage and maintain a free healthy growth in the trees. It will be necessary to keep the soil moist about the roots, and to prevent the shoots and leaves from attacks of aphid and mildew. Weakly-growing trees and plants, like animals, are more subject to the attacks of disease or pests than those of an opposite description; consequently, the trees must be constantly observed during the whole of the summer months, and a prompt action should be taken upon the first appearance of either aphid or mildew, by washing the affected trees in the afternoon with the solutions recommended in the *Gardeners' Chronicle* for April 17 last. In order to prevent attacks of red-spider, as well as to promote a free, healthy growth in the trees, Peach-trees should be well washed with clean water, applied from the hand garden-engine (very afternoon on bright warm days.

Frost Blinds.—The cloths with which the blossoms of Peaches, Green Gage Plums, and choice Pears have been protected, together with the poles, coping-beards, &c., should be removed forthwith.

THE ORCHID HOUSES.

By W. H. WURR, Orchid Grower, Barford, Dorking.

Saccolabiums.—In the case of plants of *Saccolabium Blumei*, *S. giganteum*, *S. guttatum*, *S. celeste*, *S. retusum*, *S. pumilum*, *S. violaceum*, and the white *S. Harrisonianum* in a weak condition, it is advisable to remove the flower-spikes as soon as they appear, and to give the plants generous growing treatment. It is also a good plan to remove the sphagnum-moss from the plants, and to fill up the space with clean crocks. Suspend each plant near the roof glass in a moderately shady position, and each afternoon when the house is closed and the lamps down pour plenty of water through the crocks, and well moisten the roots that are clinging to the exterior of the Teak-wood basket.

Evergreen Calanthes.—*C. veratrifolia*, *C. muscaea*, and *C. Donianiana* × must be constantly examined for insect pests. Brown scale is apt to be troublesome at this period, and if not checked will cause some injury to the foliage and flower-stems. If any green and yellow aphides are detected, place the plants in some house which is being fumigated. Specimens of these *Calanthes* that are in a weakly condition should

be relieved of their flower-spikes as they appear. The proper time for reporting such *Calanthes* is immediately after the flower-spikes are cut; but the present is a good time to report unhealthy specimens from which the spikes have been removed. They require rather large pots, and these should be about one-third filled with crocks, over which a tin turf of loam with the grassy side downwards should be placed. The compost should consist of fibrous yellow loam, with the addition of a little leaf-soil, coarse silver-sand, and small pieces of charcoal or broken crocks. Pot the plants moderately firmly, allowing about half an inch of space below the rim of each pot, to permit of efficient watering. They should be grown in the intermediate-house, but they will also grow vigorously in the ordinary stove. Place them in a shady part of the house, and where they may obtain a moderate amount of fresh air daily. Plants of the hybrid *Thais Cooksoni* and *P. Martine* ×, that have recently passed out of bloom, should be kept in the intermediate-house until growth recommences. Allow the plants to rest as long as possible by keeping them moderately cool, and give only a sufficient amount of water to keep them plump; they will then start away strongly and produce back breaks with greater freedom than when subjected to strong heat continually. *P. tuberculosa* often suffers from small yellow thrips; these tiny insects frequently obtain a foothold low down in the young growths before the grower is aware of their presence in the house. Now that this pretty species is starting to grow, the new growths should be closely examined every day, and if any thrips make their appearance, the XL All-vap-riiser should be employed for their destruction. Before the new growths commence to emit roots, the plant may be afforded fresh rooting material. Shallow pans or Teak-wood baskets may be used, and should be two-thirds filled with drainage, over which a thick layer of sphagnum-moss may be placed; afterwards, a layer of peat and moss, upon which the pieces of the plant should be placed, filling up closely to the rhizome with fresh growing heads of sphagnum. Place the plants in a moist shady corner of the hottest house, and keep the compost moist at all times. A slight dewing overhead at closing-time will conduce to strong growth, and also check the attacks of insect pests.

FRUITS UNDER GLASS.

By F. HARRIS, Gardener, Eastnor Castle, Leicestershire.

Cherries.—The very early trees in pots on which fruit is nearly or quite ripe, must be kept moist at the roots, but not to be subjected to overhead syringing, this being generally discontinued as soon as the fruits begin to colour, otherwise there is danger of the fruit splitting. If any signs of this be noticed afford the trees plenty of air and sufficient water at the roots to keep the fruits plump, and to enable them to ripen properly. The soil from which the fruit has been gathered should be removed to some sunny spot out of doors, and plunged to the rim in the soil, taking precautions against worms entering the pots. Such plunged trees must be afforded avoidance of water at the roots, and a good syringing in the afternoon on sunny days, so as to keep the foliage green till it drops. Later successions of Cherry-trees under glass should be closely inspected once a week at the least for maggot and black aphid, the last the worst pests that affects Cherry-trees. The best remedy against these aphides is syringing with tobacco or quassa water, as it requires such a large quantity of tobacco-smoke to kill them that it injures the trees. [The XL All Vap-riiser is excellent for the purpose. Ed.]

Plums.—The above remarks concerning Cherries apply also to the Plum, the only difference being, that the fruit requires a longer period of time to ripen. Afford manure-water occasionally to trees in pots, and syringing the heads till the fruits exhibit traces of colour, when it must be discontinued. Let the lateral shoots be stopped at the second or third leaf from the joint, and also the points of any leading shoots which are growing too vigorously; or stop them back to a lateral shoot that is well placed, and let this serve as the leading shoot.

Pines.—The early Queens are now ripening fast, and should be kept dryer at the roots as soon as colour is noticed in the fruits, manure being no longer applied. If the ripening of the fruits is proceeding too fast, or there are too many on the tree together which have reached their full size, some of the forwardest may be placed in an early vinery where they will ripen properly if care be taken that they are not supplied with much moisture at the

root. Any plants carrying ripe fruits may be moved to a cool-shed, or the Grape-room, where they will keep in good condition for a week or longer. Plants that have gone out of flower may be assisted by liberal supplies of liquid manure when they require water at the root. Be sure that the bottom heat is maintained at 85° to 90°, any check at this stage causing a loss of size in the fruit. Maintain a moist state of the atmosphere by damping walls and the surface of the bed, but not the plants, except on very bright days, when very fine dewing overhead may be afforded at closing time. Let all fruits inclined to topple over be properly supported before the crowns get awry; and all superfluous suckers not wanted for increase be twisted off.

Tomatos.—The fruits should be removed as soon as they are completely coloured, so that the later ones may increase in size rapidly. Remove all the lateral shoots, nipping them back to one leaf from the stem if the plants are grown on single stems. A lateral shoot coming out near the bottom may be left to cover the bare stem. The plants are grown on a trellis, and allowed to spread; the shoots may be tied in thinly, and if the foliage is very dense, a portion of each leaf may be cut off. As the crop of fruit increases, afford frequent top-dressings and weak liquid-manure as often as water may be required. If the later plants have been prepared as directed in a previous Calendar, plant them without delay where they are to fruit. Such plants will begin to fruit shortly after planting. Plants intended for out-of-door fruiting should be removed into coolhouses or cold frames, and gradually hardened off in readiness for planting towards the end of the month. Seeds may be sown in order to raise plants to succeed the earliest fruiting-plants.

PLANTS UNDER GLASS.

By G. H. MAYCOCK, Gardener, Luton Hoop Park, Luton.

Chrysanthemums.—The plants intended for flowering in the late autumn should be potted for the last time as soon as possible after this date. For most varieties, pots of 9 inches in diameter are sufficiently large, and these must be new ones, or others made clean by washing, and be well crocked, although numerous crocks need not be used; the best are those that are convex, which would be laid on the concave side downwards, evenly, not thrown in at random—a depth of 2 inches will suffice, and over them should come a layer of bits of turf-leaf. The potting must be done firmly, a wedge-shaped rammer being made use of for making firm the soil between the ball and the pot towards the bottom; and but a small quantity of soil should be placed in the pot at a time. If the potting-soil was mixed up as advised, it will now be in good condition for use. As for the potted plants, the protection of a cold-frame for a week afterwards, and stringing the tops occasionally during the early part of the day. If, however, for want of space, the plants must be placed out-of-doors, a temporary shelter should be provided for them, and it is well to take the precaution to stake each plant before it is removed from the potting-shed.

General Work.—A sowing of *Mignonette* seed may be made in pots, so as to form a succession to the earlier sowing, and if these are in flower in 2-inch pots, let the lateral growths be pegged down to the soil in a circle, and these will furnish good spikes of bloom. The flower spikes should be pinched off zonal *Pelargoniums* when small, if the plants are intended to flower during the winter months. Palms should be kept well syringed, more air allowed, and plenty of water afforded the soil, pot-bound plants being supplied occasionally with liquid manure. Divided *Aspidistra lutea* should, when re-established, should be removed to a cool-house or low pit, placing them where they will receive some amount of direct sunshine.

TO DRIVE AWAY ANTS.—Probably pharmacists are more often consulted on a means to drive away ants than on any other entomological subject, excepting the ever present "blackbeetle," which is with us always. We have found that a solution of naphthalin in carbon bisulphide is excellent for outdoor use, but is of course too dangerous to use indoors. For use in the house, a saturated solution of naphthalin in carbolic acid is almost equally efficacious. Bisulphide is also effectual for destroying moles on lawns, and for suffocating wasps. It should be poured down the entrance to the nest at night, and the orifice immediately closed with a clod of earth. *Journal of the Pharmaceutical Society.*

EDITORIAL NOTICES.

ADVERTISEMENTS should be sent to the PUBLISHER. Letters for Publication, as well as specimens and plants for naming, should be addressed to the EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be written on ONE SIDE ONLY OF THE PAPER, sent as early in the work as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith. The Editor does not undertake to pay for any contributions, or to return unused communications or illustrations, unless by special arrangement.

APPOINTMENTS FOR THE ENSUING WEEK.

SATURDAY,	MAY 8	Royal Botanic Society, Meeting.
TUESDAY,	MAY 11	Royal Horticultural Society's Committees.
WEDNESDAY,	MAY 12	Exhibition of Tulips and Conference at the Royal Botanic Society's Garden (two days).
SALES.		
MONDAY,	MAY 10	Bedding Plants in variety, Green-house Plants and Ferns, Carnations, &c., at Frothero & Morris' Rooms.
WEDNESDAY,	MAY 12	Japanese Lilies, Calceolarias, Tuberoses, Dahlias, Pinks, &c., at Frothero & Morris' Rooms.
THURSDAY,	MAY 13	Established Orchids; also Importations of Orchids, Bulbs, Lilies, Plants, Palms, &c., at Stevens' Rooms.
FRIDAY,	MAY 14	Established and Imported Orchids, at Frothero & Morris' Rooms.

AVERAGE TEMPERATURE for the ensuing week, deduced from Observations of Forty-three years, at Chiswick.—53°.

ACTUAL TEMPERATURES:—

LONDON.—May 5: Max., 59°; Min., 45°.

PROVINCES.—May 5 (6 P.M.): Max., 55°, E. Counties; Min., 42°, Sumburgh Head.

THE main interest in matters horticultural this week is centred in Germany. Both at Hamburg and at Berlin vast exhibitions are in progress. Of the two, the Berlin is the less important, as being relatively of a temporary character, but it says much for the energy of our German friends that two such large exhibitions should be held at the same time, more especially as the two cities are relatively not far apart, and are connected by a direct line of railway. It is no fault of the Hamburg authorities if their exhibition is not well known among horticulturists. For months past a flood of programmes and notices of various kinds have been poured on us, and we could not take up a horticultural journal, whether in this country or on the Continent, without seeing the device adopted by the authorities, viz., a little plant about to be lifted by the spade.

THE HAMBURG EXHIBITION has so far achieved complete success, owing to the enthusiasm of the Hamburg people, the excellence of its management, the funds at the disposal of the committee, the distinguished patronage, and last, but not least, its good general organisation. Among the principal members of the committee are Dr. RUDOLF HERTZ, Dr. KLEBAIN, Dr. ZACHARIAS, and other indefatigable and zealous organisers. Upon Mr. JÜRGENS has devolved the formation of the design and the carrying out of the entire work.

All sections of the exhibition—permanent, horticultural, and industrial competitions, the formation and laying out of the park, the arrangement of the plans of the buildings, the tent containing illustrations of various forms, the hall with representations of the public promenades in the chief European cities, the *salles des fêtes*, the electric lighting of gardens and buildings, the decorations and superintendence, in fact, the entire organisation of an enterprise which will for five months be the pleasure and pride of Hamburg, and make its mark in horticultural annals, is under the supervision of "Burgomaster Dr. J. G. Mosckeberg, Magnificenz."

The spring show was opened with due ceremony by the Burgomaster on May 1 in the presence of many visitors. This temporary exhibition occupies the large hall of the principal building, which measures nearly 8,000 square metres (1½ acres), various rooms and galleries, all connected one with the other for a length of nearly 2,000 feet. All these rooms are lined with plants. The principal building, planned in the German style, with a large central nave, supported by massive columns, with galleries, corners with low and semi-circular platforms, is turned into one large garden of great beauty. A lawn, with a pretty lake and cascade, whence the water passes under a viaduct supporting a group of statuary; a passage leading to the park, large chandeliers of incandescence lamps, and various other decorative features form the background of a picture whose foreground is constituted by glorious groups of magnificent plants. At the end of the hall a sloping bed, occupying the entire width of the cave, is planted with Indian Azaleas, hardy Azaleas, and Rhododendrons, and edged with hundreds of Lilies of the Valley.

Behind these, at the base of tall Palms; is a wealth of flowering plants, principally Cliveias; on each side is a pyramid of blooming *Horrensias*, whence spring splendid Tree Ferns with fine effect. On each side of the large hall, before the two flights of steps, is a magnificent arrangement of hundreds of ornamental and flowering plants, beautifully disposed. At the entrance another fine bed of Indian Azaleas is bordered with *Livistona rotundifolia*. In the four corners of the centre of the hall are groups of mixed plants, one group, composed principally of *Crotons* and *Pandanus*, attracting much attention from their excellent cultivation.

In the lawn round the lake and in other places, baskets of flowering and foliage plants, specimen Palms and *Araucarias* look well against the green turf.

The hall is well planned; the paths are very broad, though scarcely sufficiently so to permit, on the opening day, the number of visitors to move easily. All is, however, on a large scale, as is evident at a glance.

Among the innumerable exhibits which adorn the galleries and intersecting halls we must note, in this rapid general account, the interesting contribution of Orchids, among them those from Baron Schröder, which form one of the features of the present show; new and rare plants, splendid *Caladiums*, flowering *Bromeliads*, *Lilacs*, *Hortensias*, with splendid trusses; very fine *Amaryllis*, *Carnations*, *Hyacinths* and *Tulips*, *Primulas obconica* and *Sieboldi*, *Araucaria* and *Agave Bertolonii*, *Anturiums*; these and many other treasures too numerous to mention.

The work outside is done in a bold and most effective manner, the grouping of the trees, shrubs, &c., being done separately, so as to display each family or distinct form of plant to the best possible advantage; thus, one part is a fine group of *Picea pungens* (the Blue Spruce), in others groups of different species, and again in others are groups of Golden Yews, &c.

Later on, the Roses, which are planted in large numbers, should prove to be a fine sight.

The President of the International Jury is M. ATO, Siebert, Gartenbau-Director, and Manager of the Palm-gardens at Frankfort-on-the-Maine; M. WILHELM LAUCHE, Hofgarten-director to the Prince JOHANN VON UND ZU LICHTENSTEIN, is Secretary-general. Among the members gathered from nearly every country in Europe, we were pleased to notice many representatives of the horticultural Press, who may well feel gratification at their connection with so successful a horticultural exhibition. To give our readers some idea of the cost of the exhibition, it may be stated that the buildings and the groundwork, &c., involved an expenditure of no less a sum than 200,000 marks (£10,000). The enterprise exhibited by the executive is highly commendable.

The English section of the jury comprises Messrs. BALLANTINE, GORDON, HUDSON, and SANDER.

To Baron von SCHRODER (gr., Mr. BALLANTINE) is

awarded a Gold Medal, for his exhibit of Orchids; and to Messrs. SANDER & Co., St. Albans, a Gold Medal and special prize of 100 marks, for *Dracaena Godseffiana*, as the finest new plant and novelty in the exhibition. The plant in question is a remarkably fine example. Having been shown in England, any further description would be superfluous.

THE BERLIN EXHIBITION is held in commemoration of the seventy-fifth anniversary of the Society of a forbiddingly long name, which may shorten to that of the Prussian Horticultural Society. It was opened a day or two before the Hamburg Exhibition, by the EMPRESS of GERMANY, and is the most extensive show of the kind ever held in Berlin, the space enclosed being no less than 14,000 square metres, of which 10,000 are covered in.

The Rees occupy the greatest amount of space, but it is to be deplored that the dull cold weather in April proved so unfavourable to the forcing of Rees, so that numerous plants had only a few of their blossoms expanded.

Next to the Rees the Palms are the most numerous represented, and, most fortunately, some extensive collections containing many diverse and rare species, and a few large and beautiful examples.

Orchids are poorly represented, and are not so good as in 1890. Among foliage plants, the *Caladiums* in large collections are deserving of special mention; also the variegated *Crotona* (*Codiaeum*), which are now hard-ened-off in Germany in rather low temperatures, and in consequence they are available for employment in apartments without suffering.

The most remarkable display of flowering plants is made with a collection of the best varieties of *Rhododendrons*, arranged on a large rocky.

Of *Azalea indica*, the plants observed are small in point of size—1 foot in diameter in the case of the smallest; examples of from 2 to 3 feet in diameter being entirely missing. The collections of zonal *Pelargoniums* are very good; *Cyclamen* are shown in moderate numbers, but amongst them some specimens of the finest quality, carrying about 200 gigantic blooms (raiser, CARL EHRENT, at Zielenzig) were noted. The *Cyclamen* previously mentioned in these pages as being shown by H. TOUBENTAL are inferior to these plants.

The specimens of *Hydrangea hortensis*, with red and blue flowers, are numerous, likewise *Fuchsia*s. Most remarkable are the Cape and New Holland plants, which are at length receiving attention. *Ericas* are shown in large collections; and *Boronia* are shown by Messrs. SPIELBERG & DE COENE, of Pankow, in excellent examples.

In accord with the taste of to-day, herbaceous plants are largely shown, inclusive of *Primulas* and *Auriculas*, and in particular those from H. BACKER, of Pankow, are excellent. A new feature at exhibitions are the "room plants," shown by persons who cultivate them without professional assistance; and especially numerous in such exhibits are species of aquatic and Cactus. Valuable and extensive collections of Cacti are displayed by various commercial cultivators.

Among hardly subjecta *Conifers* are very fine, the best collection coming from H. LOFFBERG, Berlin. Two small plans of gardens made and shown by students of the horticultural schools for girls at Friedenau are worthy of notice. These are intended to show the best manner in which an *Acre* (109 square metres) of land can be laid out and cultivated. The idea is to exhibit to the poorer class of Berlin in which way the many vacant building-plots in the vicinity of the metropolis awaiting the builder, but which can be rented provisionally, can be made to grow vegetables. And with the intention of showing at what cost, and with what profit this can be done, every expense, exclusive of rent, and the cost of labour, and all takings, are given.

In the technical section, a novelty is shown of a window-plant dill or board which prevents water dripping on the pedestrian when the plants are irrigated with water. It was exhibited by H. HILDEBRANDT, of Laukwitz, a place south of Berlin.

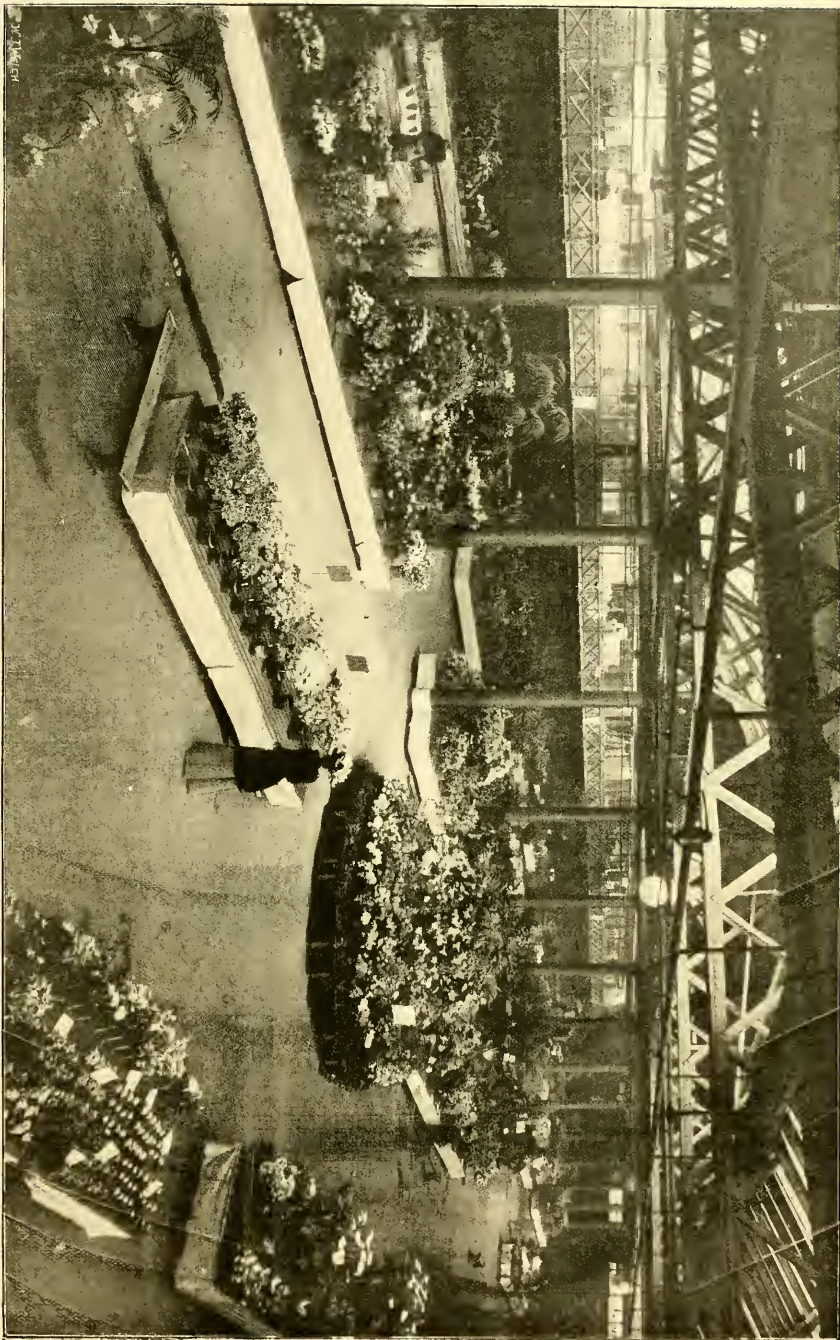


FIG. 104.—ROYAL CALEDONIAN HORTICULTURAL SOCIETY'S SPRING FLOWER SHOW, IN THE WATERLOO MARKET, EDINBURGH, APRIL 7, 8, AND 9, 1897.
(Showing the method of arrangement, which provides isolated groups and circular masses in the place of long lines of straight tables. See report in *Gard. Chron.*, April 10.)



ROYAL HORTICULTURAL SOCIETY.—The next fruit and floral meeting of the Royal Horticultural Society will be held on Tuesday, May 11, in the Drill Hall, James Street, Westminster, from 1 to 5 P.M. At 3 o'clock a lecture will be given by Mr. G. MASSEY, F.L.S., on "Diseases of Plants, especially of Orchids."

THE CRYSTAL PALACE FRUIT SHOW OF THE ROYAL HORTICULTURAL SOCIETY.—The subjoined letter explains itself:—"I feel inclined to head my letter 'Lost, Stolen, or Strayed, £100,' for though not 'lost,' or 'stolen,' the £100 required for the Autumn Show of British-grown Fruit certainly seems to have 'strayed' into the all-devouring capacity of the many-mouthed Diamond Jubilee projects. You will remember that when the Autumn Fruit Show, which had been held from time immemorial at the Crystal Palace, had fallen through, the Royal Horticultural Society offered to revive it as a Show of British-grown Fruit, with prizes to the value of £250, on condition that those interested in the encouragement of fruit-growing in this country would subscribe not less than £100 towards the unavoidable expenses. For the last few years this £100 has been forthcoming, and magnificent shows have resulted, teaching thousands and thousands of spectators what fine fruit can be grown in Great Britain, and instructing very many planters as to the best varieties with which to stock their orchards and gardens. Alas, sir! this year of especial grace, the £100 has strayed—it is not—or, at least, is not as yet. Letter after letter reaches me to the effect, 'Very sorry, but am so bed with Jubilee projects, that I cannot help this year.' In fact, Peter is to be robbed in order to pay Paul. May I be allowed to appeal to all interested in British fruit not to let our great annual show fall through for lack of £100. Immediate help is wanted, as the schedule is all ready for issue—all ready with this one all-important exception. W. Walks, Sec., R.H.S., Vicar of Shirley, Croydon.

HAMBURG GENERAL HORTICULTURAL EXHIBITION.—The following gentlemen have been selected by the French Minister of Foreign Affairs as delegates of France at this exhibition:—M. Viger, formerly Minister of Agriculture, and successor to the late M. Léon Say in the office of President of the Horticultural Society of France; M. Chatnay, general Secretary of the same society; M. Nanot, Director of the School of Horticulture, Versailles; and MM. Truffaut and Martinet.

FANCY PANSIES.—We have received from Mr. H. KEMPSHALL, Lamport Hall Gardens, Northampton, some very beautiful Pansy blossoms. The strain from which the seed has been procured is proved a good one by the size of the blooms, many of them being upwards of 3 inches across either way. The colours are fine also, and the plants have evidently been skilfully cultivated.

THE SURVEYORS' INSTITUTION.—The next ordinary general meeting, in usual course, will be held on Monday, May 10, 1897, when a discussion will take place on the paper read by Mr. J. H. REDMAN (Associate), at the last meeting, entitled, "Some Legal Incidents of Tenancies of Urban Property, as illustrated by Recent Decisions."

ANEMONES.—Mr. HARTLAND sends us from Cork a box of very fine Anemones of the S. Bridg. strain. In spite of being travel-worn, they revived in water, and presented a striking appearance.

FEVER IN PLANTS.—Mr. H. M. RICHARDS, who has previously studied the effect of wounds on plant-respiration, now describes (*Annals of Botany*, xi., 29) a course of experiments on the evolution of heat by wounded plants. He finds that accompanying the increased rate of respiration is an increase in the temperature of the parts affected. A kind of fever supervenes, and as in the case of respiration, the disturbance runs a definite course, and attains its maximum some twenty-four hours after injury. It is interesting to note that the attempt to rally from

an injury is accompanied by somewhat the same symptoms, increased rate of respiration and evolution of heat, in plants as in animals. Owing to the nature of the case the reaction is less obvious in the former than in the latter, and a delicate thermo-electric element was required to appreciate the rise in temperature; but compared with the ordinary temperature of plants in relation to the surrounding medium, the rise after injury is "as great, if not greater than in animals." The maximum in all the plants investigated was between two and three times the ordinary excess above the surrounding air. Potatoes proved the most satisfactory objects for experiment, and it was found that in massive tissues (such as Potatoes or Radishes afford) the effect of injury was local, whereas in the case of leaves (e.g., Onion-bulbs) a much greater extent of tissue was sympathetically affected. *Natural Science*.

ABIES BRACTEATA.—We are indebted to the Earl of DUDLEY for the following measurements of this tree, which was planted at Tortworth probably between 1858 and 1862:—Height, 52 feet; circumference at 1 foot from the ground, 6 feet; spread of branches, 36 feet. The soil is old red sandstone, the aspect much exposed to S.W. winds, and about 260 feet above the sea. Male catkins of this tree and of *Picea sitchensis* were also obligingly forwarded by his lordship.

A JUBILEE WALL DECORATION.—The loyalty of the British public is this season to find expression even on such articles as wall decorations. Messrs. ALFRED CHAPMAN & Co., of Rathbone Place, W., have brought out a specially-designed frieze and filling to commemorate the present year of Jubilee. The wall-filling shows a design of Roses, Thistles, and Shamrocks, and part of the frieze is in accordance with this, but is intended to be a setting for one or more "picture" panels. These panels represent the QUEEN overlooking troops of dancing children bringing offerings typical of various British and Colonial arts and sciences. Wall-filling and friezes can be had in green or in terra-cotta shades, and seem especially well adapted for use in public rooms or other buildings in which Jubilee business may this year be transacted. The firm above mentioned have also ready some transparencies and window decorations useful to those who wish to illuminate.

"CULTURE DES CHRYSANTHÈMES A LA GRANDE FLEUR ET A TAILLE BASSE." By G. CHAPMAN and A. CHOULET (LYONS: RIVOIRE ET FILS).—We have just received a copy of this cultural manual, dealing with the production of dwarf large-flowered Chrysanthemums, or, as the authors call their method, "culture Lyonnaise." The work was first issued about a year ago, but it appears that a second edition has been called for, and although the contents are in many respects similar, the new issue is revised and enlarged, and contains several fresh illustrations. Besides the ordinary cultural directions in the body of the book, there is a calendar, and a list of varieties.

THE TOTLEY HALL DAFFODILS, owing to the kindness of their owner, Mr. MILNER, are becoming very well known to such Yorkshire folk who admire a floral display. The gardens have recently been again thrown open to the public, when about 500 persons visited them. Daffodils are treated as a *specialité* at this seat near Sheffield, and the collection includes such rare and valuable varieties as Glory of Leiden and Weardale Perfection. Mr. T. BIRKENSBRAW has charge of the gardens.

"ENCYCLOPÆDIA OF HORTICULTURE."—The MACMILLAN COMPANY announce that the compilation of an *Encyclopædia of American Horticulture* has been begun under the editorial supervision of Prof. L. H. BAILEY, of the Cornell University. There has never been a really good and adequate presentation of American horticulture, and this book proposes to make good the want. It is to cover horticulture in its widest sense, pomology, floriculture, vegetable gardening, greenhouse matters, ornamental gardening, the botany of cultivated plants, and the like.

The work will consist of signed articles by specialists, profusely illustrated by engravings made expressly for it. The articles will be arranged alphabetically, and it is expected that the number of entries will be about 6000, comprised in three large volumes, dated 1900. The earnest co-operation of every student of horticultural pursuits, and every lover of rural life is solicited, in order that the work may be worthy of the opening of the twentieth century. *Botanical Gazette*, March.

PHORMIUM COLENSOI.—In regard to the comparative hardness of this plant, and its propagation by means of seed, we have received the following interesting note from Mr. A. PETHICREW, the well-known gardener at Cardiff Castle:—"This fine ornamental plant stands well planted out in the open shrubberies here, and is seldom injured by frost in the severest winters. It has on several occasions, during the last sixteen years, flowered freely, and produced abundance of well-ripened seeds, which, when sown, germinate freely; but, strange to say, I have not succeeded in saving any of the plants. I have tried to raise them from seed for several years, but utterly failed to produce a plant which had chlorophyll in its leaves. The leaves are white, and the plants seem strong, but when they have grown to about an inch in height, they dwindle off and die."

WIREWORM AND PROTECTIVE PLANTS.—On reading a note in a contemporary on "Capture-plants" being cultivated in some German gardens to clear the land of eelworms, we are reminded of that which was not an uncommon practice many years ago here, in regard to quite as dreaded an insect foe, the true wireworm. So greatly infested was the soil in some gardens as to make it an impossibility to grow roots of Carrots fit to put on the table, or to raise sufficient Parsley to meet the demands of the kitchen, unless rows of Lettuce were sown alternately with the plant it is desired to protect. The wireworm is evidently a creature of very decided predilection as regards the food it imbibes, and although passionately partial to the juices of Carrots and Parsley, it deserts them both to feed on Lettuce. Another instance of the protection that one kind of plants affords another occurs in the case of the mole-cricket, *Gryllotalpa vulgaris*, a voracious feeder on the roots of plants; and as some aver on worms, larvæ, &c., which prefer a Potato-tuber to anything else, but abominates the roots of the Cucurbit, although it will burrow in the loose, rich soil of Cucurbit frames in search of food, committing plenty of havoc in doing so. Hence, in countries where the mole-cricket is more common than it is in Great Britain, it is a general practice of gardeners to set Potato-tubers just beneath the soil as food for them.

BEECH.—Dr. FRIDRICH KRASSER has recently published, in the *Annalen des K. K. Naturhistorischen Hof Museums*, Vienna, a monographic sketch of the genus *Fagus* and its allies. Four species of Beech proper are retained, viz.: 1, *syriaca*; 2, *Sieboldii*; 3, *japonica*; 4, *ferruginea*, Aiton (= *F. Americana* Sweet). The other Beeches, sixteen in number, are included in the genus *Nothofagus*, characterised by short styles; male perianth cup-shaped, irregularly lobed; stamens thirty to forty; scales of the involucre free.

LONGEVITY OF THE LARCH.—The *Chronique Agricole du Canton de Vaud* contains various records concerning the age attained in Switzerland by the Larch. There are at Maysens-de-Sion two old Larches which measure from 20 to 22 feet round the base, and 65 feet in height. Both are referred to in a plan of the grounds dated 1546, where they are mentioned as "the two Larches before the house." They were then a good age, and now are 351 years older. These years do not seem to have weakened them, as they are in full vigour. Another Larch is found on the Alp de Torrent, near Albinen; it is called the boundary-tree, as every hundred years the people of Albinen and Louécheles-Bains go out to it to re-mark the boundary. On its trunk a sort of niche has been cut in the bark, and on the exposed wood are engraven the dates

from 1400 to 1700. Larch wood has considerable durability; the above journal mentions a chalet at Loucheles-Bains where the piece of wood which supports the ceiling is of Larch, and bears the date 1536.

AN APPLE-PEAR TREE.—M. TH. BIELER commented an interesting fact at the meeting of the Société Vandoise des Sciences Naturelles, at Lausanne, on Nov. 4 last. He brought forward a fruit intermediate between the Pear and the Apple, a sort of "Apple-Pear," gathered in 1893 in an orchard in Canton Vaud, on an espalier Apple, Bedfordshire Foundling, several branches of which intercrossed with those of a neighbouring Pear-tree, Maréchal de la Cour. The fruit bore traces of both species; it had the eye of the Apple, and the stem was inserted in the oblique manner of the Pear. M. BIELER thinks that it is a case of impregnation, not of simple hybridisation, an example of "xenia," according to M. FOCKE'S terminology. Xenia is very exceptional. It consists of a sort of cross-breeding, evident in the seed and in the fruit, although, usually, the fecundation of a flower by pollen from a different species results in a seed having the characteristics of the seed of the mother-plant, while the plant growing from such seed has the characteristics of the male parent. M. BIELER observes that if there be already examples of a Pear-Apple, an Apple-Pear is not yet known. Further, he does not guarantee the certainty of the phenomenon in the present instance; since 1893 no Apple-Pear has been produced, but the thing is possible, and in 1893, the similarity of the blossoms of the two trees was noticed. This is rare, as the Pear usually blooms before the Apple.

MAIZE AND TEOSINTHE.—In the American Museum of Natural History, New York City, there is an ear of corn displayed in the room on the ground-floor at the left-hand side of the main entrance, which was collected by CARL LUMHOFF, the explorer, among the Tarahumara Indians of Mexico. It is identical in all respects with the form which I described in *Garden and Forest* (vol. ix., p. 523), as produced by crossing, for three seasons successively, Teosinthe (*Euchloa luxurians*) and Maize. It is interesting to note the occurrence of this form among a wild tribe which comes little in contact with white men. Dr. NICOLAS LEON, of Mexico, informs me that this hybrid is encountered among the Mixes and the Zapotecs inhabiting the State of Oaxaca, and that there it is called Maíz de los Gentiles. Another interesting fact concerning Maize and Teosinthe is one made known by Dr. WILLIAM TRELLESE, of the Missouri Botanical Garden. It is well known that corn-sunt, *Ustilago Zea-Mays*, fastidiously confines itself to the Maize-plant, being found on no other plant. Dr. TRELLESE discovered that it also grows parasitically on Teosinthe, a fact which also points to the close affinity of Maize and Teosinthe, if they are not identical. J. W. HARTSHORNER, in "*Garden and Forest*,"

INSECT POLICE.—We take the following extract from an article of Mr. R. C. PERKINS, published in a recent number of *Nature*, p. 499:—"The first importation of *Coccinellids* to destroy hordes of scale-insect in the Hawaiian Islands was made in 1890, when *Vedalia cardinalis* Muls., a native of Australia, was sent over by Mr. ALBERT KOEBELE. At that time many trees were in a deplorable condition from the attacks of *Icerya*, Monkey-pod trees being particularly badly infested—so much so that they were being largely cut down as the only recourse. The *Vedalia* was a complete success; it became perfectly naturalised, increased prodigiously for a time, practically cleared the trees, and then, as the *Icerya* became comparatively scarce, decreased in numbers, while at the present time it is evident that the number of the scale and its destroyer has arrived at a fixed proportion. Previously to its introduction here the same lady-bird had done excellent service in the fruit orchards of Lower California. . . . In many parts of the islands the Bananas and Palm-trees have been severely attacked by the larva of a species of *Pyralidina*. There is little doubt that in course of time this plague will be entirely kept under by a fine Chalcid (*Chalcis*

obscurata, Walk.), introduced from China and Japan, which has already multiplied enormously at the expense of these caterpillars—so much so, indeed, that in many localities the trees have now entirely recovered. Again, within the last few years a *Lamellicorn* beetle (*Adoretus umbrinosus*) has been introduced from Japan. This insect speedily multiplied prodigiously, and soon destroyed nearly every Rose-tree in Honolulu, and subsequently attacked the foliage of many other trees. The cultivation of Roses—once a feature of the city—became impossible, while a remedy seemed hopeless. One day, however, Mr. KOEBELE discovered a parasitic fungus, and by cultivation of this, and infecting healthy beetles, soon spread it far and wide. Whether the fungus will prove entirely effective is not at present certain, but in any case it will be a most useful aid. The writer has seen the ground under trees which were attacked literally strewn with dead beetles—all killed by the fungus—and beneath the surface of the soil the larvae had likewise perished. It is at least certain, therefore, that myriads of the beetles were destroyed very shortly after the fungus was spread around by the individuals that had been infected."

PUBLICATIONS RECEIVED.—*The Genealogical Magazine*, a Journal of Family History, Heraldry, and Pedigrees (ELLIOT STROCK, Paternoster Row). This is the first number of a well got-up magazine, which we commend to the notice of genealogists and antiquarians.—*English Illustrated Magazine*. The May number includes, among other interesting contents, an article upon the various homes in which Queen VICTORIA lived in her youth.—*European Mail*, a useful periodical for absent friends.—*Expanded Metal, and its Uses in Fireproof Constructions*, published by the Expanded Metal Co., Ltd., 39, Upper Thames Street, London, E.C.

HOW TO DIS-ESTABLISH BRACKEN.

I ENVY your correspondents who cannot get the common Bracken to grow in their woods. Hereabouts, the difficulty is to prevent it getting the upper hand. Mr. Fish's rough and ready plan of "clothing the landscape and woods" with it is the best, where transplanting is adopted, but by seed is the easiest. Transplanted about this season, the wounded rhizomes bleed and die, or become so weakened that they do not soon recover, and that, probably, is one reason why transplanting sometimes fails; but dug up as soon as the fronds turn brown, it will grow like a weed. I, however, caution owners against introducing Bracken into their woods, because it is a fertile cause of fires, and very injurious to the underwood and young trees. Old workmen in the woods here have assured me that they remember the time when some of our most extensive woods were comparatively free from Bracken, and full of underwood that was readily sold with the timber that was felled; but in these woods at the present day the Bracken forms one unbroken mass from 4 to 6 feet high (I have found single fronds 12 feet long), and all the underwood (Hazel, &c.) is destroyed. Before the Bracken came, the underwood used to grow freely again from the stools; but wherever cut down after the Bracken had got dense, it never grew again, being smothered in the first and second years by the latter. In a wood of 60 acres, from which a good crop of underwood was sold in 1868, there is now not a stick, the Bracken having smothered it. It would be the same with young plantations were I not to employ squads of men and boys to beat down the Bracken at the stage when it bleeds freely when beaten; and this practice has to be continued till the trees get their tops above it, otherwise the tree-crop would be lost. This beating the Bracken down when the fronds are just unfolding and brittle certainly weakens, and finally kills it; but it is expensive work, and the cutting of Heather and other rough herbage is nothing to it. It is a veritable nightmare to anyone having the charge of woods where it

abounds. As to fires, we have one Oak wood of some 1400 acres on this estate, almost every acre of which has been swept severely by fires caused by railway locomotives during the past twelve years, and all owing to the dead Bracken, which, between January and June, gets as dry as tinder and fires as readily.

In every case sparks from the railway engines of fast trains have caused these fires, and a decision in the higher law courts on a claim for damage (by a nobleman whose name I forget) last year, has brought the frequency of, and responsibility for, such conflagrations into notice in some of your contemporaries. In the case of the wood here, the railway traverses the wood for about 4 miles, and on windy days the sparks from the engine are blown among the Bracken at the side of the line, and in a few minutes afterwards the wood is ablaze, a wall of fire rushing through it that nothing can resist, and it has to burn itself out. In one fire, a few years ago, the flames traversed a mile or more of wood in one direction in a broad belt, destroying, among other things, about 450 odd tall Hollies, which were burned to their topmost twigs. These were all valued separately. The damage to the Oak and other timber trees consisted in the scorching sustained by the trunks of the trees, killing many, and encumbering all more or less, so that they had to be felled and sold. The history of the valuation of the damage caused by these fires would form a unique chapter in forestry. I am told by those who know, that we have quite beaten the record. The late Mr. Bruce Findlay, of the Manchester Botanic, acted for the railway people, and we always got on fairly. Until the railway company adopted my suggestion and beat down the Bracken within a certain distance of the railway these fires were all of almost annual occurrence, and many a wanderer in the Bracken I and Findlay had. I cannot forget his coming one hot day when the Bracken was waist-deep, and held you like a rope, his turning round and asking, "Is it all like this, Simpson?" and when I assured him cheerfully that the exceptions were worse, he sat down on the nearest stone, and his remarks on "Feros" need not be here repeated. I know I offered to supply him with any quantity of roots, "put on to rail" free of cost if he would dig them up, and when we got among the Blechnum, he took me at my word, and not a few of these used to or may now adorn the shady corners of his "Botanic."

If Bracken could be employed for any useful purpose, it would be different. There is a big paper-mill near one wood where Norway and German wood-pulp from Spruce is used in enormous quantities, but I cannot persuade them to take our Bracken. It will make paper, as they have proved, but it wants too much cleaning to get at the fibre. I have not, however, given up hope, as I find the sticks of the fronds, where the fibres are dead, can be almost shaken free of the leaf portion, and if these stalks could be collected at a reasonable rate, the above objection might have less force. Meanwhile, if you can tell me of any plan of getting rid of Bracken as easily as it can be transplanted, you will oblige.

Reverting to the subject of claims for damage to woods and farm crops caused by railway engines, I may say that in the law case referred to above, the claim was by a nobleman in the south of England for a large amount for damage to woods, and that he lost because the railway company pleaded successfully that all reasonable care had been taken, and the case is likely to afford a precedent for the future. The subject is important, because fires amongst crops are continually taking place near to railways. As these fires are almost all caused by fast trains (the speed of which has been increased) on windy days by the sparks being blown from the engine funnel, there is only one way of preventing the sparks reaching fields or woods, and that is by causing the sparks to fall on the track. This has been done, I am told, in America and also on the Highland railway, by a device for turning a spark-guard over the mouth of the funnel when required. I suggested this strongly to the head engineer of one well-known line, but his objection was that anything of that kind checked the draught and speed on gradients, and that on windy days, when

fires were most likely, the wind-pressure on the train caused the wheels to bite the rails more closely, and this, in its turn, had to be overcome by harder firing, which caused the sparks to fly. I leave it there, but I still think a wire guard above the funnel practicable.

If railway companies intend to plead non-liability it will be a hard case for some. I have naturally had a good deal of correspondence on the subject from parties whose crops have suffered. Woods, corn crops, Hay crops, and timber yards seem to be most liable to catch fire. I find the railway people already acting on the recent judgment referred to

on dark nights, as I have special reason to know, the stream of sparks left behind the engine resemble the tail of a comet more than anything else, but fires never occur except when the wind is strong enough to blow the sparks off the rails where there is nothing to catch fire—a fact which suggests the means of prevention. On these windy days the railway company do take precautions by posting men along the line with branches in their hands to beat the fires out at the first ignition. If that is not done, the flames get beyond control in a few minutes, and all the fires mentioned have occurred in spite of these pre-

ANTHONY WATERER.

MANY of our readers will be pleased to see a likeness of this typical English nurseryman, whose loss we have recently had to deplore. The illustration here shows Mr. Waterer when in the prime of life, and it is not difficult to read in his countenance the straightforwardness and determination which characterised the man. For him a plant was good or bad for its purpose; if bad, its fate was elimination, sharp and sure. A sketch of Mr. Waterer's career was given in our columns at pp. 628, 757, vol. xx.

LOWTHER CASTLE.

LOWTHER CASTLE has an air of princely magnificence about it, and standing as it does in a well-wooded park of about 800 acres, with the River Lowther running through the grounds, the approach to the mansion is picturesque and beautiful. The Earl of Lonsdale is the present head of the ancient family of Lowther, which has figured in history for at least 500 years.

"Nature and art to adorn the scene combine,
And flowers exotic grace this northern clime."

I was reminded of these lines after walking past the mansion and peeping for a few minutes into the sculpture gallery. Passing through the conservatory at the west end of the mansion, we came upon a natural dell, the sloping sides of which have been turfed and planted with choice shrubs—a fit setting for the beautiful geometrical garden laid out in the centre. Here Mr. Clarke has shown for several seasons how well the tuberous Begonia is adapted for bedding purposes. There are handsome vases studded about the garden in suitable positions. The sloping sides of the dell and the surrounding woods help to break the force of the high winds prevalent in the district.

This lovely spot is termed the Countess's Garden, and during last summer we lingered here to admire the effect of well-placed flowers and shrubs. The visitor next passes through into the Yew Avenue, composed of trees of immense size and great age, the stems curiously fluted in a twisted manner. They are so closely planted, that the branches are all intertwined overhead, and form a delightful shade in summer. There are also, outside the avenue, splendid examples of the ever species of Conifers.

Some eighteen or twenty years ago, the *Gardeners' Chronicle* gave an account of Lowther and the dimensions of some of these notable Conifers. At that time *Abies Douglasii* was 75 feet in height and 6½ feet in circumference 3 feet from the ground. Mr. Clarke very kindly measured this and other trees, and found it to be now 100 feet in height, and at 4 feet from the ground it is now 9 feet in circumference. *Abies Menziesii* was 65 feet high, and the girth at 3 feet from the ground was 6 feet. It is now 90 feet high, and at 4 feet from the ground the girth is 8 feet 7 inches.

Abies cephalonica was 50 feet high, and at a yard from the surface of the ground its girth was 4 feet; now it is 70 feet high, and at 4 feet from the ground, its girth is 6 feet 10 inches. When the report above referred to was given, a fine *Abies Pinespo* was 40 feet high, but it was unfortunately blown down by a gale of wind in December, 1895. *Tsuga canadensis* was 42 feet in height, and 3 feet in girth; it is now 50 feet high, and 5 feet 4 inches in girth. There are two immense Ash trees, designated Adam and Eve, but Adam is the larger of the two. It was 21 feet in girth, 5 feet from the ground; it is now 23 feet. We leave the shady avenue of Yew trees, taking a lingering look at the noble Conifers, and are soon in the midst of a delightful Rose-garden—and such a garden; it is 3½ acres in extent, and contains upwards of 500 beds of Roses. Most of the beds contain but one variety, and all the best varieties of Roses are here. The Crimson Rambler is trained to poles, and in this way is very effective. The old Rose *Yivid* is grown as a pyramid, and Madame Plantier was well to the front. Lord Pezance's Sweet Briars are also planted freely. When I add that the beds are cut out of beautifully verdant turf, some



THE LATE ANTHONY WATERER.

above. Quite lately, the owner of a small wood told me that he had planted it up, and had it turned either two or three times. On the last occasion, the company did their best to keep the fire within bounds with their own men, but declined to pay for the trees killed. He has now planted it again, and warned the company that they will be held responsible in future for such frequently-repeated destruction. The question is where does the "due care" and preventive obligations of the railway companies end? Our wood here is traversed by the fastest trains in the world (between London and Liverpool), according to an article in the *Stroud Magazine*. The incline begins at the one end of the wood; there the stoker begins to poke his fire up, and

cautions. Those who only know the common "Brake" in its dwarf habit, as found on poor soils or exposed situations—as, for example, on the bleak coast of the Isle of Man, where it is about 6 inches high—may wonder at its rakness here, where it takes a man over the head, forming, when the fronds fade, one of the most inflammable masses possible. About thirty years ago a fire, supposed to be caused by a spark from some one's pipe, consumed 40 acres of wood. This was all replanted, and a few years ago this young plantation, which contained thousands of fine Corsican and Austrian Firs, was swept out of existence by a railway fire, the Brackon setting the green trees in one sheet of flame in a few minutes. *J. Simpson, Wortley.*

idea may be formed of the charming effect it has, but beyond this it owes much to the surrounding trees and shrubs. Carnations—"the fairest flower of the garden"—are well grown here. The Carnation seems to succeed better out-of-doors in the North of England than in the South. The cooler, moister atmosphere, and probably greater rainfall, is apparently enjoyed by the plants. I have noticed particularly the vigour of the Carnations in the Thames valley. The rainfall at Louth is about 40 inches each year. Under glass, Mr. Clarke had fine plants of the *Tree-Carnations* *Mlle. Thérèse Franco*, *Miss Joliffe*, and *Winter Cheer*. Some of the more notable growers of winter-flowering Carnations inform me that they have discarded *Miss Joliffe* for *Mlle. Thérèse Franco*; the latter has much larger flowers of the same delicate pink tint. Some of the old-fashioned New Holland plants still find a congenial home at Louth. The *Swainsonias* are fine, especially *S. alba*; it is a handsome sub-climbing plant. The *Gardenias* are grown well, and as *Gardenias* always ought to be grown, namely, planted out in peat and loam. Besides the old, well-known *G. florida*, the varieties *G. intermedia* and *Fortunei* are cultivated.

Mr. Clarke grows very excellent fruit in the houses under his care, and Cucumbers also. The best Peaches are *Stirling Castle*, *Cromson Galande*, and *Royal George*; these are forced early. In the late-house are *Barrington*, *Noblesse*, and *Princess of Wales Peaches*, and the *Stauwick Elruge Nectarine*. There are many objects of interest at Louth, and few places in the North are so well worth a visit. *J. Douglas.*

HOME CORRESPONDENCE.

RHODODENDRON CAMPYLOCARPUM IN ARGYLLSHIRE.—I send a truss of *Rhododendron campylocarpum*. It may be referred to many of the *Gardeners' Chronicle* readers to know that the bush from which this truss is cut was planted out-of-doors twenty years ago at Pottaloch in the West of Argyllshire. The plant is healthy, and flowers regularly every year, although not profusely. *D. S. McNeill, Pottaloch.* [See fig. in *Gardeners' Chronicle*, 1892, ii., p. 699. ED.]

VIOLETS.—"I am much interested in all that concern the varieties of this family, and I naturally perused with pleasure the article from Mr. D. T. Fish in the last issue of the *Gardeners' Chronicle*. I observe he mentions a white Neapolitan, and that its history is somewhat obscure. I have never heard of one of this description, except occasionally, and then of the habit and growth of *Swanley White*, which is supposed to be a somewhat delicate variety, and by some thought to be a sport from the well-known mauve-coloured Neapolitan. Assuming that I am right respecting its origin, although its reference is rather ambiguous, and that its history is apparently obscure, allow me to say "No; it is nothing of the kind." I purchased the stock direct from *Comte Brazza* in Italy, consequently, I had a just right to give it what name I thought proper. I also obtained a dark-coloured variety, and named it *Venice*, but it proved to be of no value. The name *Swanley White* was suggested by Mr. E. Bland, of *Fuchsia* fame, who saw and admired the first few flowers produced in this country—from here it was sent out, and ultimately Certificated; and from the fact of its being such an acquisition, and not liking its proper name, the name *Comte Brazza* was erroneously used, and the variety advertised as being much better in several respects than *Swanley White*, but which time has proved to be fallacies. Strange to say, although I protested, editors have to this day thought it correct to allow its false name to be used. It has also been publicly stated by gardeners, who have grown the supposed two distinct varieties side by side, that they were identical. As a further proof, I supplied it in large quantities to expert growers in America, where it is to this day highly appreciated, and, I am grateful to say, always honourably called by its correct name, *Swanley White*. I hope after this explanation its fictitious name will no longer be used. Mr. Fish asks what distinction is there between *De Parne*, *Lady H. Campbell*, *Marie Louise*, and *New York*? These are all of the same colour, or practically so, and to a casual observer would be thought to be one and the same; but if the four were planted out, and allowed to stand all the winter in the open, it would be seen that

they differ in growth and in hardiness. *Duchess of Edinburgh* and *Marguerite de Savoie* might also be classed as similar, but they can well be dispensed with. *Marie Louise* is decidedly the best, although *Lady H. Campbell* is late, and flowers splendidly when the others are almost over. *Henry Cannell, Swanley.*"

—I have been interested reading in your paper the opinions that have been expressed about *Violets*, and in particular I noted what was written about the variety *Princess of Wales*, some of which I am able to confirm. I may say that this variety has had my close attention for at least eighteen months, and compared with about a dozen other varieties, I am of opinion it is by far the best. It is very hardy, of free growth, a profuse bloomer, the blossom rich in colour and large, the flower-stalk long, and very fragrant. I can also bear testimony that up to the present I have not seen a diseased plant in beds containing a few thousand plants. I have grown *Violet Wellisiana*, *V. odoratissima*, *V. The Czar*, *V. Victoria Regina*, the *Russian Violet*, and others (in singles), for a long time. Each of these has its good feature, but none anything like so favourable as the *Princess*. *Amiral Avellan* (new) I have tried to a certain extent, and like its colour and habit. *Violet California* does not appear to be at home at present in our soil, except in a frame. If its hardiness does not improve, I am afraid I cannot speak of it succeeding in this locality. *Fied. Perkins, Northampton.*

ALLOTMENT GARDENS AT HIGH WYCOMBE.—Notwithstanding the fact that Lord Carrington has disposed of Wycombe Abbey and a portion of the surrounding land, a considerable part of the estate remains in his lordship's possession, and also the numerous allotment gardens for which High Wycombe is famous. At the present time there are 1200 allotments averaging in size from 16 to 20 poles, and all these are in the parish of High Wycombe. The price paid by the tenants is an annual one of from 2d. to 4½d. a pole, according to the position of the allotment and the quality of the soil. A memorandum of agreement between Lord Carrington and the tenant is duly signed, the tenant agreeing to properly cultivate the ground, keep it clean, free from weeds, well manured, and in good heart and condition. If the tenant erects a pigsty or any other building, he is at liberty to remove it at the end of his tenancy, or he may sell it to the succeeding tenant; but Lord Carrington does not undertake to take over the same by valuation. His lordship claims under this agreement to take possession of any piece of ground let as allotments on giving three calendar months' notice; and in case of such determination of the tenancy, the landlord pays for the cultivation or crops on the ground such a sum as may be agreed on, or as the same shall be adjudged to be worth by any valuer the said landlord and tenant may appoint, all rent due and half the charges of the valuer being deducted from the valuation. Rents are paid annually at Michaelmas, and Lord Carrington makes a point of returning it to every holder who pays promptly. His lordship maintains all the boundary fences enclosing a piece of ground set out in allotments, and he pays all rates upon the ground; if the holder of an allotment desires to fence in his plot from his neighbours, he must do so at his own expense. The allotments are occupied by labourers and artisans chiefly, and some by tradesmen. Occasionally rent is unpaid, but cases of such are few. No action is taken by Lord Carrington as to the way in which the allotment is tilled; some are much better kept than others, which is usually the case. It is, perhaps, to be regretted that in parts of the county allotments are so frequently allowed to lie untouched during the late autumn and winter months, when they become covered with weeds. Lord Carrington allows tenant-right in the case of an allotment being yielded up to another tenant; but, as a matter of course, an agreement with his lordship has to be signed, as no tenant can underlet or part with the possession of the ground or any part thereof. Lord Carrington will have allotments on all his estates; and in the case of High Wycombe, if a piece of land used as allotments lying near the town is required for a building site, a corresponding piece is set apart for allotments elsewhere. It will interest many friends of Mr. G. T. Mills to know, that in addition to having had charge of the gardens at Wycombe Abbey for the space of forty years, he has also taken the superintendence of the allotments during that time, and has had the satisfaction of seeing them greatly grow in number, conferring substantial benefits upon the community. *R. D.*

THE RENASCENCE OF THE HOLLYHOCK.—I am glad to note that "D. L. M." heartily welcomes the Hollyhock back to the mixed border, of which its colour and stature were so long the grandeur and glory. But would-be successful growers had need be careful in following his advice, lest instead of a renaissance of the Hollyhock, they have a revival of the *Puccinia*, and the last estate of the Hollyhock-disease prove worse than the first. There is no objection to begin with the best possible seeds of the finest strains. But why, if stocks are really clear of disease, and one, two, or more true to name can be had from the grower already named, the days of budding, striking from cuttings, and grafting Hollyhocks are past and gone, is by no means obvious. As a matter of fact, all these processes are in full operation to the production of thousands of named Hollyhocks. Such modes of propagation were only laid aside while the *Puccinia malvacarum* ruled, and reigned, and wrecked our Hollyhocks. But now that colonies of clean and vigorous Hollyhocks are raising their heads in various directions, the best strains are being perpetuated and multiplied on the only absolutely sure and possible lines. It is also found that fine strains of Hollyhocks under cool treatment and careful quarantine resist the fungoid pests as well or better than seedlings. "D. L. M." may or may not be right in writing the best time to sow Hollyhock seeds is in the second week of March, but he is emphatically wrong in adding the seed-put being put into heat; and the pottings first-up to 60's, and then into 45's, and successive hardening off in time to plant in the open in May are all superfluous, and consequently worse than useless. The time is short, the processes are many, and the plants are necessarily hurried through to give them an constitutional confidence. More likely process for the conversion of the entire structure of the Hollyhock to a nucleus, for the nurture of the *Puccinia* past can hardly be imagined. The raising in heat, the shift, the hardening off, the forcing, and the checks can do no possible good, and may do the plants irremediable mischief. Supposing "D. L. M." sowed his seeds in the open air in March or April, and left them severely alone, and kept them clear of weeds throughout the summer and autumn, the plants would assuredly be strong enough to place out to their blooming-quarters in September or October. Or seeds may be sown in their blooming quarters at once. The Hollyhock is hardy if we do not oddle or cover it into tenderness. Cool open-air treatment from the first will relieve growers from the litter and labour of screens of Spruce Fir stuck round about and over their plants. Strong, sturdy, rather than rank growth is the secret of the perfect hardiness of Hollyhocks. I flowered about two thousand Hollyhocks a year before the wreck and ruin wrought suddenly by the *Puccinia*. And though all these years our weather losses were never heavy nor serious, and old seed was not good from our surplus stock of divided stools that were laid in by the heels, or planted out in the late autumn. I am glad to be able to agree with "D. L. M." as to the desirability of a frequent change of soil for Hollyhocks as often as practicable, and that the stations for the plants should be trenched and manured, and the plants receive good attention throughout the summer, affording water and manure when necessary. Also that seed should be sown annually to maintain a vigorous stock of plants, enough and to spare, to fully furnish the Hollyhock-quarters with the charms of novelty, as well as the more stable and reliable, well-proved named varieties. *D. T. F.*

MODERN TREATMENT OF SPRING-FLOWERING BULBS.—Hosts of growers are at a loss at this season of the year, when their spring-flowering bulbs are past blooming, to know what to do with them. How to dispose of them, in fact, in the readiest manner—economically, and with regard to their safety and identification later on of kinds and varieties. Peds in which they have bloomed have to be dug up and planted with summer-flowers, and this has to be done in a brief period of time, owing to the many calls on the gardener's time at this season. What seems to be the readiest way to overcome the difficulty is to chop out trenches upon vacant ground, place the different kinds of bulbs therein in their varieties, and stick to the end of each row a label with the name plainly written thereon. There is, however, danger when this plan is followed of the labels becoming displaced when the leaves have "died down," of their being mixed when dug up, to say nothing of decaying during wet seasons—especially the latter when the soil in out-of-the-way corners is heavy. Now that varieties of Narcissi are

so numerous, and the bulbs are, in many cases, valuable, the above make-shift plan does not seem very commendable. Mr. Jordan, the Superintendent of Regent's Park, has perfected a method, which for simplicity as regards nomenclature, &c., deserves to be known. The bulbs, when dug up, which is done early in the public parks, have their leaves cut off at about 1 inch from the top of the bulbs, they are then placed thickly in a layer in shallow boxes, and are covered over with light mawre, or similar material, wherein they ripen off well and perfectly. Owing to the immense numbers grown, special arrangements have been made for the winter storing, a shed capable of taking all the boxes having been specially erected, having numerous lightly-constructed stages to receive them. It is insignificant bulbs in the parks are all purchased for planting each year; the real fact is, that great care is taken of those that have flowered. That Mr. Jordan's plan is a good one, needs no evidence of mine, when the fine quality of the floral display in this park in the spring is taken into consideration. *William Earley.*

CINERARIAS.—The efforts now being made with a view to determine the exact parentage of the garden Cineraria, and to develop new forms, will doubtless render the following extracts from the *Florist and Garden Miscellany* for 1849 both interesting and useful. Writing as a florist on "the properties of a good Cineraria," A. Kendall of Stoke Newington, a well-known and successful raiser of new varieties, says:—"The petals should slightly cup; a perfectly flat flower will pass, but if the petals refer to it is a fatal point, and cannot be overlooked." In an earlier part of the same article, the writer states that he "hopes yet to see every pip as large as a half crown, and as round as a full moon." In another part of the same volume appears a beautifully executed coloured-plate of the following varieties, Kendall's Princess Seeding, Sanspareil, Richard Cobden, and Henderson's Carlotta Grisi. Assuming that the natural size of the flowers is here shown, the best of them (Richard Cobden, a blue), barely attains the standard size. In each case the flowers lack substance, breadth of petal, and fulness of form. The illustration represents in every particular, except colour, a flower taken from one of the plants exhibited by James in 1896, the diameter being $\frac{3}{4}$ inches. It will thus be seen that Kendall's hopes have been more than realised; and, judging by the improvements effected during the past ten years, we may reasonably expect very shortly to see even better things. In the matter of colour, Kendall's dreams are to a certain extent unfulfilled, for while some beautiful shades of crimson and white are in existence, the scarlet and yellow that he considered possible have not yet appeared. Judged by the standard of points laid down in the foregoing extract, many of the largest flowers in our best collections would have to be condemned, as they are mostly reflexed. Happily the florists' code of points is no longer like the laws of the Medes and Persians, and one may fairly ask the question whether, in face of recent developments, it is not desirable to frame a new code? The Cineraria appears to be rising in popularity every year, both in Europe and America, and if our horticultural societies will do what is in their power to encourage and reward the men who have done their best to make the plant popular, our judges will soon need some such code to guide them in the discharge of their important duties. While the French and German growers have been working hard at the improvement of the Cineraria, it cannot honestly be charged to insular prejudices that the results of their efforts are not as highly appreciated in England as they doubtless are in their own countries. The flowers of the French strain, although very much larger than of our own, and in many respects embodying Kendall's code of form, are nevertheless much too loose, and also lack substance. On the other hand, the colours are generally very bright, and the appearance of the plant is very effective. If the German strain is fairly represented in the coloured plate recently issued by Mr. Benary, it may fairly be described as "large and singular." Only two flowers in the group at all approach the English standard, the others have two, and in some cases three rows of petals, each perfectly flat, and not in any way resembling the tubular varieties which are shown on other parts of the same plate. The range of colours is large and varied; but one very glaring defect is, that the colours of the centres are as varied as those of the petals, while our best English growers hold a dark centre to be a *sine qua non*. Judging by a display recently made at the Drill Hall, the double Cineraria is as susceptible of improvement as the

single form. At the same time they cannot be fairly described as a success from the commercial standpoint. Some of these days a startling development in colour will reward the patient and persistent grower, and then it is quite possible they may "catch on." *S. B. D.*

LIME-RUBBISH AND CANKER.—Very recently, when looking through a small orchard near Farnham, Surrey, and on rather stiff soil, I noticed some Cox's Orange Pippin trees, about ten years planted, that were in perfect health, making clean growth and carrying ample bloom. Yet on the main stems of the trees were evidence of canker having existed, in the form of big gaping wounds or eruptions. The owner of the orchard, an intelligent amateur, stated that when he saw the trees were becoming diseased, he had a dressing of well broken mortar-rubbish lightly forked into the ground about the trees, and since then has given other occasional dressings, and to these he attributed the present fine healthy appearance of the trees. This matter is well worth knowing, because so many whose trees suffer from the canker-epidemic can try a similar experiment at trifling cost. Where mortar-rubbish is not at disposal, then fresh slacked lime strewn over the ground and forked in, may suffice, but there can be no doubt but that the silica found in mortar-rubbish is a useful element in the case, and particularly so in stiff soils. Such a fact as is here shown tells forcibly that canker is more the product of omission in the soil of a needful constituent than of any mere fungoid attack. *A. D.*

FRUIT TREES IN HEDGE-ROWS.—Mr. McDonald has pretty well summed up the merits and demerits of this matter, and his decision is certainly antagonistic. Practically, the country has nothing to gain by the growing of inferior fruit, such as would inevitably result from planting trees in hedge-rows. What with inferior fruit, and thin broken hedge-rows that are really intended to become fences both against human beings and cattle, there would be loss in each case. The only form of fruit culture needed in this country is the very best. We have had too much bad culture, if the term "culture" can be rightly used, of inferior varieties in the past, with the result that we have nothing to be proud of. Were we so hard driven for ground to produce fruit that it was absolutely needful to plant trees in hedge-rows, we should have to make the best of the case; but it would be, indeed, a bad one. As it is, we have millions of acres of fine land delightfully situated and adapted for the purpose that may be most profitably utilised for fruit production provided it be on the best modern lines, and with the best varieties. To produce the fruit we so much need for the benefit of our home industry, as well as for our national reputation, we need the best of culture, fruit of as high quality as our fruit nurseries and best private gardens produce; but obtained not in bushels merely but by thousands of tons. Hedge-row culture will never give us that. Unfortunately, the needs of the case seem to be too imperfectly recognised. What immense results might be obtained ultimately would the Government but be as willing to sink a million of money in starting fruit culture as now in building ironclads or arming big battalions! *A. D.*

SCOTLAND.

APRICOTS UNDER GLASS.

The Apricot crop so often suffers from frost and cold weather that many owners of gardens have given up its cultivation where at one time good crops were common. The present has been one of the most untoward seasons for the setting of the bloom of the Apricot in Scotland of which we have any record. March was damp and cold, and at the end of the month there was severe frost almost every night, and April was not much better, the month being moist, with northerly and easterly winds. When the bloom opened, it suffered severely, for no sort of protection seemed capable of warding off frost. In the middle and more northerly parts of Scotland they were generally much earlier than others many miles southward. In some parts of Perthshire the best Apricots are grown in Scotland. As, for instance, at Dupplin, where Mr. Browning has given them special attention for many years, and been well rewarded for his pains; at Kintpaupe Castle fine crops

have been gathered in common with other places in the District. Frost is generally severe in the places referred to, but the position of the gardens is elevated, and they are well sheltered from the north and east winds. The success attained at Dunkeld with wall fruits generally has often been chronicled, and we should like to learn what Mr. Fairgrieve's prospects are this season at that fine Highland seat. It is a matter for remark how little headway Apricot culture under glass makes in Scotland, very few gardeners attempting it under glass in Scotland compared with what one may meet with in many parts of England. It may be that the late spring frosts in the south, accompanied with the forcing power of the sun, renders the aid of orchard-houses more useful in the south. Still, where orchard-houses are well managed in Scotland (take Drumlanrig Castle as one of the best examples), they are very valuable adjuncts—in gardens; as quantity and quality far exceeds that of any culture in the open.

In England Apricots are often well done, the pots and tubs being taken outside and plunged in ashes after the crop is gathered where the wood is ripened; at which time the orchard-house is at liberty for other purposes. Some cultivate Apricots, with the roots planted in firm soil very successfully where the lights can be removed in the autumn, and the system of ventilation is in accordance with the requirements of the plants. This last is perhaps the chief point in the successful fruiting of the Apricot; and the quality of the soil has much influence in the production of fine fruits. I have before me a letter from Mr. McTaggart, the gardener at Arnishton, Midlothian, in which he gives some details of his management of the Apricot. He referred to the splendid results obtained under glass last autumn which I saw in a simple lean-to house erected for other purposes, about 12 feet wide and over 12 feet high, with ventilation at the front 3 feet above the wall. Holes are formed for the emission of roots, and no doubt this is a good plan for fruit trees, as they will be induced to make plenty of fibre before they reach the open border. Mr. McTaggart writes that no special preparation was made for the Apricots beyond trenching the soil and mixing plenty of lime rubbish in it—this abundance of lime in the soil has much to do with the fine fruits and trees to be seen in Oxfordshire and Wiltshire on walls and buildings. The Apricots at Arnishton carried a great crop, and the trees crop more or less heavily each year. The trees make short spur-like growth, possess healthy foliage, and are kept to a certain height (about half-way, or less), up the front near to the glass, which permits abundance of sunshine to reach the Plum and Peach trees trained on the back walls, which also bear fruit capably. Air is admitted abundantly, but never as cutting draughts. The garden at Arnishton lies rather low on land that slopes towards the north. I think that the good natural soil, abundance of lime-rubble, holes to allow of the egress of roots, and abundance of ventilation, have much to do with success in fruiting the Apricot at that place. *M. Temple, Carron, N.B.*

SOCIETIES.

ROYAL HORTICULTURAL. Scientific Committee.

APRIL 27.—Present: Dr. M. T. Masters (in the chair); Rev. W. Wilks, Rev. G. Henslow, Hon. Sec.

Tulips Discased.—With reference to the Tulips "Golden Crown" sent to the last meeting by Mr. Thomas Polegato, the following is the report received from Kew:—"The leaves are attacked by a fungus called *Botrytis vulvaris*, a destructive parasite to various bulbous plants. The mycelium of the fungus travels down the tissues of the host plant, and forms minute sclerotia or lumps in the bulb and also in the soil in which the plant is growing. These sclerotia remain dormant during the winter, and commence to grow the following spring when the young leaves appear. Your correspondent is right in supposing that he will get no blooms. The wisest thing to do would be to remove all the diseased plants. It would not be wise to plant bulbs in the soil where the diseased plants have grown for the next two years. If this cannot conveniently be avoided, then let him plant 'trap-

LIVERPOOL: *May* — Average of the prices current at the undrained markets.—St. John's Potatoes, 8d. to 10d. per peck; do., new, 5d. to 6d. per lb.; Asparagus, 5s. per box; Cucumbers, 4d. to 6d. each; Carrots, 5s. to 6s. per cwt.; Mushrooms, 1s. 3d. per lb. Birkenhead.—Potatoes, 8d. to 10d. per peck; do., new, 4d. to 6d. per lb.; Peas, 5d. per lb.; Asparagus, 2s. 6d. to 3s. 6d. per cwt.; Cucumbers, 4d. to 6d. each; Apricots, 1s. per dozen; Gooseberries, 8d. per lb.; Grapes, foreign, 1s. do.; Currants, 8d. do.; Strawberries, 6s. per lb.; Mushrooms, 1s. 6d. do.; North Hay.—Potatoes, per cwt., Emperor, 2s. to 2s. 4d.; Giants, do.; Main Crop, 2s. 6d. to 3s.; Champions, 2s. to 2s. 4d.; Bruce, 2s. 4d. to 2s. 6d.; Swedes, 1s. 4d. to 1s. 6d. per cwt.; Carrots, 5s. to 6s.; Onions, foreign, 6s. 6d. to 7s. do.; Cucumbers, 2s. to 3s. per dozen; Cauliflowers, 1s. 6d. to 2s. 6d. do.; Cabbages, 10d. to 1s. 3d. do.

CORN.

AVERAGE PRICES OF BRITISH CORN (per imperial qr.), for the week ending May 1, and for the corresponding period of 1896, together with the difference in the quotations. These figures are based on the Official Weekly Return:—

Description.	1896.		1897.		Difference.
	s. d.	s. d.	s. d.	s. d.	
Wheat	25	8	27	9	+ 2 1
Barley	22	6	20	5	- 2 1
Oats	14	3	17	3	+ 3 0

THE WEATHER.

[The term "accumulated temperature" indicates the aggregate amount, as well as the duration, of degrees of temperature above or below 42° Fahr. for the period named; and this combined result is expressed in Day-degrees—a "Day-degree" being 1° continued for twenty-four hours, or any other number of degrees for an inversely proportional number of hours.]

Direction.	TEMPERATURE.				10th E. Inch.	Bright Sun.				
	ACCUMULATED.									
	Day-deg.	Day-deg.	Day-deg.	Day-deg.						
Above (+) or below (-) the Mean for the Week ending May 1, 1897.	Above 42° for the Week.	Below 42° for the Week.	Above 42° difference from Mean since January 1, 1897.	Below 42° difference from Mean since January 1, 1897.	More (+) or less (-) than Mean for the Week.	No. of Rainy Days since January 1, 1897.				
	Day-deg.	Day-deg.	Day-deg.	Day-deg.	Total Fall since Jan. 1, 1897.	Percentage of possible Duration for the Week.				
						Percentage of possible Duration since Jan. 1, 1897.				
0	2	32	14	+ 7	- 13.0	aver 79	13	25	25	
1	2	30	17	- 13	0	aver 2	71	8.5	59	26
2	1	40	3	+ 35	- 77.0	aver 73	7	8	27	27
3	2	58	4	+ 47	- 121.2	aver 71	8	7	40	28
4	2	58	3	+ 25	- 118.1	aver 70	10	10	39	27
5	2	64	0	+ 53	- 180.1	aver 66	11	10	47	29
6	1	43	6	- 17	- 21.1	aver 74	13	8	44	27
7	0	aver 44	3	+ 24	- 80.0	aver 77	10	10	42	28
8	2	58	0	+ 42	- 135.1	aver 84	17	0	41	28
9	2	37	9	- 33	+ 8.1	aver 85	12	8	35	27
10	1	45	6	+ 21	- 49.3	aver 81	15	2	29	29
11	1	66	0	+ 137	- 83.1	aver 86	14	3	39	30

The districts indicated by number in the first column are the following:—

- 0, Scotland. N. Principal Wheat-producing Districts—1, Scotland, E.; 2, England, N.E.; 3, England, E.; 4, Midland Counties, 5, England, including London, 6, Principal Grazing, &c., Districts—6, Scotland, W.; 7, England, N.W.; 8, England, S.W.; 9, Ireland, N.; 10, Ireland, S.; "Channel Islands.

THE PAST WEEK.

The following summary record of the weather throughout the British Islands for the week ending May 1, is furnished from the Meteorological Office:—

"The weather during this period was of two distinct types. During the earlier half of the week it was fine and dry in the north, and somewhat unsettled, with occasional rain over the southern districts, and with thunderstorms on Tuesday or Wednesday. Later on, the conditions improved very considerably in the south, but became unsettled and showery in the north.

"The temperature continued below the mean in Ireland and Scotland, but was rather above the normal in nearly all the English districts. Its range was considerable. The highest of the maxima, which were recorded on April 27 over England and Ireland, and on May 1 in Scotland, ranged from 76° in England, S.W., and 69° in England, S., and the Midland counties, to 62° in Scotland, W., and Ireland, S., and to 59° in Scotland, W. The lowest of the

minima were registered, as a rule, during the earlier part of the period. They ranged from 26° in Scotland, E., 28° in Scotland, N., and 30° in England, E., to 26° in England, S. and S.W., and to 44° in the Channel Islands. Frost occurred on the grass on some occasions in most parts of the kingdom.

"The rainfall did not differ very materially from the mean, being rather deficient in some districts, and a little in excess in others—more particularly in England, E.; while in Scotland, N., and England, N.E. and N.W., the fall just equalled the normal.

"The bright sunshine exceeded the mean in almost all the English districts, and also in Scotland, W.; in England, S.W., and the other parts of the kingdom the aggregate values were less than or just equal to the mean. The percentage of the possible duration ranged from 47 in England, S., and 44 in Scotland, W., to 25 in Scotland, N., and Ireland, S."

Obituary.

ELLACOMBE.—On the 30th April, at Bitten-Vicarsage, Gloucestershire, EMILY ARILLA, wife of Revd. Canon Ellacombe, Vicar of Bitten. R.I.P.

NOTICES TO CORRESPONDENTS.

A FOREIGN SEED: *B. A.* The seed sent is that of a species of *Mucuna*, apparently *M. urens*, a native of the West Indies and South America. It is known by the several names of Ass's-eye, Horse-eye, or Ox-eye. *J. R. J.*

ANTS IN HOUSES: *C. N. M.* The *Baliininkrain* Ant Destroyer. See paragraph in our present issue, p. 303. Also treacle in saucers, and carbolic acid.

APPLE BLOSSOMS WITHOUT PETALS: *Ecklinville.* Suppression of the petals in flowers of some varieties of Apple is not uncommon. It is a curious phenomena in your case, but will probably not hinder the blossoms from setting properly.

ACCUBA BERRIES: *J. R. B.* When ripe, layer them in a small pit or large flower-pot with damp sand, say, two layers of berries and then a layer of sand, and so on. When the pulp is decayed, rub it off the seeds, and sow the latter in drills in the open, or in boxes 4 inches deep, filled with a sandy, loamy mixture, and keep in a cold pit till germination takes place.

A YELLOW ROSE FOR A HIGH GREENHOUSE: *A. E.* William Allan Richardson, Jaune Desprez, or Cloth of Gold. The first two are highly scented.

BOOK-KEEPING: *W. S. G.* We are not aware of any book that teaches a method particularly suitable for the nursery trade. For learning Pitman's system of shorthand, you should obtain *Pitman's Shorthand*, of any bookseller.

BOOKS: *E. M.* Esquire of Mr. J. Douglas, Barkingside, Ilford.

CHRYSANTHEMUMS: *W. G.* We regret that it would be too great a demand upon our space to give you a list of all varieties of Chrysanthemums that should figure in one collection. Consult a cheap book upon the subject, such as that by Ed. Molyneux, or that by W. Wells. In the latter is given a selection of seventy-two varieties in dozens, according to their merit as exhibition varieties. The price of this book is 1s. from W. Wells, Earlswood Nurseries, Redhill, Surrey. In regard to your second question, consult Messrs. H. Cannell & Sons, Swanley.

CORRECTION.—Our valued correspondent, Herr Wendland, tells us that the *Wallichia* figured on p. 283 is *Wallichia disticha*, and not *W. densiflora*.

CUCUMBERS: *F. P. P.* The Cucumber is attacked by no fungoid disease, nor do the roots show the least trace of eel-worms. We suspect the injury is due to syringing during sunny weather with insufficient ventilation, hence scalding; or, possibly, to defective glass, which is a frequent means of plant-burial.

ELEGIO CULTURE: *X. Y. Z.* Experiments have been carried out, and the results embodied in their bulletins by the Massachusetts Agricultural College, Amherst, Mass.; and the College of Agriculture of the Cornell University, Ithaca, New York County, U.S.A.; and you could doubtless be supplied with the various bulletins on application to the College authorities. No such experiments, fully carried out, have been made in this country. Notices have appeared in this Journal p. 790, vol. ix., 1891; pp. 616, 704, vol. 10, 1891; p. 42, vol. xi.,

1892; pp. 214, 311, 466, vol. xii., 1892; pp. 273, 394, vol. xiv., 1893; p. 143, vol. xv., 1894; pp. 221, 756, vol. xvi., 1894; pp. 14, 397, vol. xvii., 1895.

GARDENING ADVERTISING MEDIA: *X. Y. Z.* *La Semaine Horticole*, 101, Rue Belliard, Brussels; *Revue Horticole*, Librairie Agricole de la Maison Rustique, Rue Jacob, Paris; *Revue de l'Horticulture Belge*, M. Edward Pynaert, 132, Rue de Bruxelles, Ghent.

LATE PRUNING OF FRUIT TREES: *W. S. G.* The results of hard pruning on the fruit trees would be very late growth, and the consequent insufficient ripening of the shoots thus made, the lower parts of these being probably matured, but the upper parts would be immature, and likely to suffer from frost; but the entire length of shoot would ripen the next year, and probably set some fruit-buds on the more thoroughly ripened parts of shoots. The predisposing cause of ordinary canker is to be looked for in the soil, although there is a species of canker (gumming) brought about by frost rupturing the bark, and thus admitting fungus, *Nectria ditissima*.

LILIUM THOMSONIANUM OF LINDLEY: *W. T.* You are quite correct in your orthography. If you will consult the *Index Kewensis*, you will find therein—*Frillaria Thomsoniana*, Don (1838), referred to *Lilium Thomsonianum*, Lindl. (1845); *F. macrophylla*, Don (1825), to *Lilium roseum*, Wall. (1832); and *L. Thomsonianum* to *L. roseum*, Wall. Cat., whence we take it that if you think it a *Frillaria*, you should call it *F. macrophylla*, D. Don (1825), but if you prefer to call it a *Lily*, then the name must be *L. roseum*, Wallich (1832). You will see by the dates given that the plant was named many years prior to Dr. Thomas Thomson's travels with Sir J. D. Hooker; but we have not at hand the books necessary for ascertaining who the Thomson was that is thus attacked.

MUSHROOMS ATTACKED BY A MOULD: *W. T.* See answer to "A. E." in last week's issue of the *Gardener's Chronicle*.

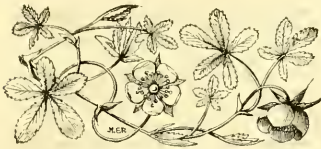
NAME OF FRUIT: *Sir Chas. S.* We cannot say with any degree of certainty at this late season; skin much bruised.

NAMES OF PLANTS: Correspondents not answered in this issue are requested to be so good as to consult the following number.—*H. M. E.* *Sempervivum arborescens*.—*J. R.*, *Villoyeu*. *Brassia Keiliana*, a species varying much in colour, that form sent being sometimes called *B. cinamomea*.—*C. H.* 1, *Epidendrum Stamfordianum*; 2, *Epidendrum alatum*.—*X. L. C. R.* *Phalaris arundinacea variegata*. Some seedsmen may supply seed, but the usual method of propagation is by means of the underground stolons, as in Couch-grass.—*J. G.* 1, *Bifrenaria Harrisii*; 2, *Dendrobium thrysiifolium*; 3, *Anthurium Scherzerianum*; 4, *Dendrobium primuminum*; 5, *Nepthrodium molle*; 6, *Pteris serrulata cristata*; 7, *Euphorbia splendens*; 8, *Acalypha tricolor* or *Macleodii*; specimen poor. We cannot name *Pelargonium* from leaves.—*T. Thompson*. 1, *Dendrobium undulatum*; 2, *Dendrobium Johannis*; 3, next week; 4, *Celsia cretica*; 5, *Epidendrum alpinum*.—*R. A.* Yes, *Tulipa sylvestris*. If the specimen was found wild, we should be pleased to learn privately in what locality it was found.—*X. Y. Z.* Probably, *Begonia dichotoma*.

RHOENODENDRUMS: *W. S. B.* If you can obtain good fibrous-root, well-moulded, and some sort of sand free from sea-salt and iron, it would be wise to remove the plants and treuch the beds, mixing with the staple a large proportion of the fresh materials, and replant at wider distances apart. Is the drainage of the land what it should be? Rhododendrons like a moist soil, but not one in which the water stagnates. Is lime found in large quantities in your soil?

XANTHOCERAS SORBIIFOLIA AND CARYOPTERIS MASTICANTHUS: *S. H.* Newport. This first comes from Manchuria and Northern China, and was introduced by Père David in 1865. The second was introduced by Fortuna from China in 1844, and again later by Messrs. J. Veitch & Sons and others. It was figured in the *Gardener's Chronicle* for February 2, 1884, p. 149.

COMMUNICATIONS RECEIVED.—Ludwig Müller, Erfurt.—G. E. T.—H. & M.—W. W.—W. A.—Earl of Dudley.—G. H.—H. W.—W. W.—Ch. De R.—J. H.—National Rose Society.—C. N.—J. G.—B. & Sons.—T. X.—Y. Z.—T. S.—M. G.—W. E. S.—T. S. B.—A. C. F.—D. F.—R. L. H.—J. H. U. C. Dalmier.—W. C.—L. G.—R. D.—J. J. W.—F. R.—P. G.—F.—J. G.



THE
Gardeners' Chronicle.

SATURDAY, MAY 15, 1897.

RETROGRADE SELECTION.

I SHOULD be grateful if any of your correspondents would kindly give advice on the details of an experiment I have in prospect. Suggestions are more especially desired as to the most suitable plants for the purpose.

The experiment is intended to be carried on by a process of "backward selection," or in the opposite direction to that followed by breeders, whether of plants or animals, when they attempt to create a new variety. They select for the parents of each coming generation those individuals of their experimental stock, whose characteristics approach most nearly to the ideal type pictured in their imagination. My aim is the very reverse of this: it is to begin with a variety that has become established, and to breed back to the original form. The primary object is to learn the number of generations that must elapse before the original form is reached, under specified conditions of culture and selection. By this process it is hoped that a practical means of measuring the stability of strains, varieties and races, may ultimately become systematised, that more light will be thrown on the steps through which changes of type take place, and that many matters of high theoretical importance may be cleared up, relating to the distribution of variations and to the varying degrees of continuity or discontinuity in regression, which are too technical to be discussed here.

Whatever may be ultimately done in this direction, it seems clear that the earlier attempts should be conducted under the easiest conditions, and especially by employing the plant that seems best adapted to the purpose. The principal desiderata are: that it should be a hardy annual, in extensive cultivation, consisting of an original race, and of a distinct and well-established variety that has been recognised for a considerable time. Also that the plants, both of the original race and of the variety, should admit of being grown in a healthy state, in small flower-pots. It would further greatly facilitate the experiment if the main difference between the race and the variety lay simply in their sizes, the one being a dwarf form of the other. Anyhow for the first trial, a plant ought to be employed in which the differences are, in some way, strictly measurable. Units of length are serviceable for height of plant and for length and breadth of leaves, &c.; units of number, for number of leaves, spots, serrations, &c.; units of time, for period of sprouting, budding, &c.

The first enquiry that I make is, What plants best fulfil the above requirements?

Next, as to the soil in which to grow them, for the tendency of a variety to relapse into its original form greatly depends on the character of the soil. There are two desiderata to be fulfilled. The first is, that whatever soil be

employed, its quality should admit of clear definition, so that the experiment could be simultaneously carried on by different persons, and be hereafter repeated under precisely similar conditions, so far as that important element is concerned. The second desideratum is not immediately felt, as it relates to the possibility of future experiments of the same general character being hereafter made on numerous different plants, in which case it would be well to employ a limited number of different and well-specified soils, or perhaps only two of them, a light and a heavy, with possibly the occasional mixture of some definite dose of a chemical ingredient. A reasonable method of meeting the difficulty would be to obtain the soil annually from localities well known for their horticultural and chemical peculiarities. Therefore, the second enquiry that I make is, What well-defined soils would be suitable for these experiments?

There are many other details of procedure that require to be determined, referring to mode of planting, exposure, watering, avoidance of cross-fertilisation, &c., which could no doubt be clearly systematised on a carefully-considered plan, so as to ensure uniformity of treatment by different experimenters, but I will not at present ask particularly about these.

Assuming that we have fixed on a plant of the original stock *R*, and on its variety *V*, severally planted in suitable and specified soils, and that the experimental series *X*, planted in the same soil as *R*, is intended to change *V* back into *R*, the proposed experiment would be something of the following form:—There would be a few, say a dozen, specimens of both *R* and *V*, and fully 100 of *X*, each planted in a separate flower-pot, requiring the use of some 124 pots altogether. *R* and *V* would be annually raised from seeds procured from the same seedsman, to serve as references, for they and the experimental set would be equally affected by the varying peculiarities of the climate, &c., in different years, as well as by the permanent environments of the locality.

For simplicity of explanation, let us suppose the noticeable difference between *R* and *V* to consist in their height at the time when they begin to bud, *V* being a dwarf variety. Also that the change backwards occurs gradually, and not by sudden jumps on the part of individual plants. Some days before the expected period of budding, a provisional attempt would be made to so arrange the pots that the plants shall stand in orderly sequence, beginning with the shortest, and ending with the tallest. The pots of *R* and of *V* would be arranged on the same principle. When the buds begin to show, the orderly arrangement of the three sets would be carefully and finally revised, and the class-place of each plant in its respective series would be chalked on its pot, No. 1 signifying the lowest place. Consequently the two middlemost of the *R* series would be 5 and 6, the two middlemost of the *V* series would also be 5 and 6, while those of the *X* series would be 50 and 51. A single class-place makes little difference except towards the extreme ends. The next step is to see by direct comparison whether *R* 5 or *R* 6 coincides in height with any one of the *V* series, placing them on either side of it. In the first year, probably, the middlemost of the *R* would be taller than the tallest of the *V* set. In that case, set aside the, say, five tallest of *V*, viz., Nos. 96 to 100 for seeding, and pinch off every bud from every other plant of all the sets, so that no risk of cross-fertilisation may subsequently

arise, while a sufficient number of seed-plants are preserved to avoid the injurious effects on their offspring of close interbreeding. Or it may happen, if not in the first year, then in some subsequent year of the experiment, that a match to *R* 5 or *R* 6 may be found at some particular class-place in the *X* series, say at the 80th class-place. Then keep Nos. 78, 79, 80, 81, 82 for seed, and destroy all other buds as before. In all cases, make an exactly similar comparison between *V* 5 and *V* 6 and the *X* series. Lastly, obtain a photographic record of all the three series of plants, *X*, *R*, *V*, by putting the pots in orderly arrangement, with their chalked sides foremost, upon five shelves fixed to a vertical wall, twenty-five on each shelf; then setting the camera squarely in front of them, the whole can be photographed on one plate, without distortion. Tapes of inches, or the like, should be fixed to the shelves to give the scale of the photograph. By these means every desirable measurement of the plants admits of being leisurely made by the statistician, who will treat his measurements according to modern methods, and deduce the required information from them.

Proceeding year after year in this way, the mean height of *X* will increase, but it would be inadvisable to wait until the middlemost plant of *X* closely coincided with the middlemost of *R*. The increase in height of *X* may be very rapid during the earlier years, but will become gradually slower, and at length so slow that close coincidence will not occur for a long time; and, again, when it does so, the precise epoch could not be determined with confidence. It would be much better to complete the experiment at an earlier stage. That which I would propose is the first year on which the *X*-plant, which occupies the 75th class-place, in a series of 100, fairly coincides in height with the middlemost of *R*. Technically, this would be termed the "upper quartile" *X*-plant, because it stands one-quarter of the way down from the top-end of the class. The height of the upper quartile plant (as of that occupying any other specified class-place), is independent of the number of plants in the series, so long as they are sufficiently numerous for statistical purposes. The upper quartile is very easily ascertained, whatever the number of the plants in the series may be; it is an easily-remembered class-place, and it is one that plays an important part in the higher methods of statistics. Had *V* been a large variety, and not a dwarf variety of *R*, the lower quartile, or the twenty-fifth plant in a series of 100, would have been employed.

It is hardly necessary here to speak at length on such changes of the process as would be needed in the very probable event of some few of the *X*-plants making a sudden change to *R*, because the reader can easily foresee them.

The process just described, except the photographic part of it, is not restricted to single and measurable characteristics, but is generally applicable, so long as the individuals admit of being classed in orderly sequence, whether by measurements, by intercomparison, or by marks awarded according to the judgment of an examiner. Thus, when plants, or animals, are submitted to prize competitions, the judges have to take simultaneous note of numerous "points," and to give their marks and classify accordingly, and they do so with fair precision, as shown by the accordance between the judgments of different experts. Therefore, although the measurement of a single character and the

opportunity of direct intercomparison by moving the flower-pots into different positions, may reasonably be insisted on in the earlier experiments, a much wider field of work lies open to the future, after the practicability of the simplest and most direct method shall have been assured.

I am painfully conscious of the shortcomings of this too brief sketch of the details and of the full purport of the experiment in view; but I send it all the same, because it adequately explains what I am particularly desirous to learn, and because a complete explanation would take up too much space, and be necessarily very technical. Should further information of the latter kind be desired, I would refer to a paper and calculations just published by myself in *Nature*, April 29, p. 605, which I worked out with reference to one phase of this very topic. Francis Galton, 42, Rutland Gate, London.

AQUILEGIAS.

THERE are not many flowers that possess higher qualifications than these for garden cultivation. I am greatly surprised that their culture should be comparatively limited in Scotland, where they can always be grown successfully. They are for the most part hardy, vigorous in growth (especially the hybrids from *A. cœrulea* and *A. chrysantha*), and highly decorative in general effect. Many of them are contemporaneous in their period of bloom—such, for example, are the "Canadian" and the "Golden" Columbies, which are, in my opinion, the most reliable, hardiest in character, and longest lived of all. They are not less valuable than the fragrant *Viola* and the many-coloured Spanish *Iris* for artistic value; but, unlike those somewhat evanescent flowers, they survive for many years even in situations where other more tender plants would soon die.

Aquilegas, like many other alpine and herbaceous plants, have a wide distribution. They are chiefly discoverable among the loftier mountain ranges of Europe, Asia, and America. We need not, therefore, be surprised at their capability of enduring the great severity of frost, when we remember the regions whence they have come. Indeed, it may be said that so far as regards such truly alpine forms as *A. glandulosa*, which finds itself at home in the Highlands of Scotland, a comparatively cold climate is requisite for their success. It has been asserted by several writers on *Aquilegas* that many of the finest varieties of the plants require to be treated as biennials, and grown periodically from seed to ensure perpetuation; but I find that this is not necessary, in my part of the country at least, for the continued existence of *A. cœrulea* hybrida, *A. canadensis*, or *A. chrysantha*, which, so far from perishing prematurely, like their unreliable associate, *A. glandulosa*, after one short season of limited bloom, seem to grow stronger and more massive every year. It is possible that they might be found more transitory if grown further south; yet I cannot but remember that some of the grandest hybrids from *cœrulea*, *chrysantha*, and other notable varieties have been cultivated as perennials by the Messrs. Veitch of Chelsea, Mr. Thomas Francis Rivers of Sawbridgeworth in Hertfordshire, and Mr. Harry Turner of the Royal Nurseries at Slough, all of whom are enthusiastic admirers, like myself, of this Orchid-resembling flower.

It is somewhat remarkable that the Scottish cultivator, who has given us the most vigorous and the most enduring, also, perhaps, the loveliest and most fragrant of *Violas*—the miniature, rayless variety, entitled *Violetta*—should also have originated the most exensively beautiful of all *Aquilegas*, viz., *A. Stuarti*, a highly interesting hybrid (as I am informed by the raiser), between *A. glandulosa* and *A. Witmanniana*, which requires to be treated invariably as a biennial, and cultivated very carefully in deep, fertile soil. It was, I understand, named by the late Professor Balfour at Edinburgh, and introduced into cultivation by Messrs. Cocker of Aberdeen.

I am free to confess that, notwithstanding all my

efforts, I have not hitherto been very successful with *Aquilegia Stuarti*, probably because the best situations in my garden having been previously occupied by *Roses*, *Tigridias*, *Iris*es, *Narciss*i, and *Eastern Lilies*, I was unable to give it a sufficiently rich soil; and though I have had it occasionally in flower, I have found that its blooms, however imposing in dimensions and artistic in aspect, are comparatively rare. Nevertheless I affirm, that notwithstanding the limitations indicated, it is well worth growing for its attractiveness. It is a distinct advance on *Aquilegia glandulosa*.

One of the finest and earliest in flowering of the Californian varieties is *A. cœrulea* hybrida, manifestly a cross between *A. cœrulea* and *chrysantha*; for the former, which precedes this fine hybrid by nearly a fortnight, is entirely destitute of any primrose hue, which consequently was the result of cross-fertilisation. This, possibly, may have been the work of insects. Here this variety, not less than its parent, is a true perennial, demanding little attention in summer, no protection in winter, and showing no diminution in vitality at the end of ten years. *Aquilegia Skiuneri*, a native of the northern regions of South America, I have not found so vigorous as *A. californica* or *A. canadensis*, of which the former, with its brilliant scarlet hues, is unquestionably one of the showiest of all the American Columbins. It is even finer than *A. canadensis*, which, I am informed, originally came to this country from Virginia. Its grows abundantly in the North American forests, and generally in extremely rocky situations. It is, I may incidentally observe, a variation from this interesting flower, of considerably stronger constitution than the original, which is generally cultivated in European gardens. I have not found it under any circumstances or climatic conditions arduous of cultivation, having experienced much more difficulty with other varieties, such as *A. alpina* superba, *A. glandulosa*, and—as I have indicated—*A. Stuarti*. Among the most beautiful of recent hybrids are those which have been raised and introduced by the Messrs. Veitch; many of these have a very distinguished appearance, quite unlike that of their predecessors, for which reason they are worthy of general cultivation.

A celebrated writer on Rose-culture has somewhere said, that if he were strictly limited by any unkind fate to one variety of the Rose, he would choose that most vigorous and most prolific of all climbing varieties, *Gloire de Dijon*. If I were similarly restricted with reference to *Aquilegas*, I would, without hesitation, and for similar reasons, select the beautiful *Aquilegia chrysantha*. A plant stronger in constitution, more exuberant in growth, more luxuriant in flowering, and more singularly artistic in floral formation, and in aspect, for garden ornamentation does not exist. *David R. Williamson*.

AMERICAN NOTES.

NEW VARIETIES OF FRUITS.

The report of the Pomologist of the United States Department of Agriculture for 1895 has just been distributed, and though as tardy as any Government document, it is worth notice. As usual, the matter of greatest importance is the report on "Promising New Fruits," under which head are described the various Apples, Pears, Plums, &c., which have been recently introduced and brought to the notice of the Division of Pomology. The list includes 100 varieties of Apples, mostly quite new, 13 varieties of Pears, 3 of Apricots, 11 of Cherries, 25 of Peaches, 17 of Plums, 2 of Grapes, 4 of Oranges, and 1 of Pomele. This record for a single year indicates that the American fruit list is increasing with all desirable rapidity. Of course, these records represent a very large country, with many very diverse conditions, wherein a considerable number of these varieties achieve only a local importance. But it is easy to see that our fruit list will soon become so tremendous as to frighten the conscientious student of pomology; and a complete revision of Mr. Downing's book has

already become an impossibility. It may also be seriously doubted whether the further wholesale introduction of new varieties, especially to the Apple list, is worth while.

Of the introductions in question, two of the varieties of Apple, one of Apricot, and four of Cherry, are of Russian or Polish origin. A great deal has been said in recent years about the additions to the American fruit list from the Russian importations; but it is probable that the figures here given represent with fair accuracy the relative importance of those introductions. The Russian fruits are making proportionally much the greatest headway in the Cherry list. The Russian Apples are gaining some attention in very cold sections of the States and the Dominion, while the Russian Plums remain practically unknown. The American fruit list is growing to be more and more—almost exclusively—American, which means only that American seedlings are proving to be better adapted to local conditions than their parent varieties imported from Europe. And that is only what might have been expected.

FOREST RESERVATIONS.

A strong fight is being made at Washington against the large forest reservations made by President Cleveland during the last days of his administration. Cattle-men, miners, railroad men, and many other private interests with which the reservations interfere, are bringing every political influence to bear on President McKinley and on Congress to have the order rescinded. It seems probable at the present time that some concessional modifications may be made in the executive proclamation of reservation, but it is hoped and believed that no general abrogation of the order will be attempted. *F. A. Waugh, Burlington, Vermont, April 23.*

METHODS OF PROPAGATION.

(Continued from p. 285.)

CONIFERS FROM SEED.—If only a few trees or shrubs of any kind are required, and it is desired to raise them from seed, sow the seed in boxes or seed-pans, and place them in a cold pit, where they should be watered as often as necessary. Transplant the seedlings into the quarters as soon as they are large enough, and thus prevent the roots becoming matted together. Conifers are always best when raised from seed; they can then develop naturally to the acute pyramidal form, that makes these trees so useful to the landscape gardener. When planted for ornamental purposes, they should never be crowded, but if grown for timber only, it is necessary to plant them closely, as they draw one another up, as it is called, and may be thinned out when they reach the desired height by simply cutting down, as they do not, like many other trees, "stool," or throw up young growth from their roots. The cones generally do not attain maturity till the second year after forming. The structure of the wood, as viewed in section under the microscope, is unique, the pitted cells, which are always present, determining at once that the tree from which the section has been cut was a Conifer. The most important northern timber trees belong to this order, but a few only are grown largely in this country as forest trees, the great bulk of the Fir timber being imported from Norway and Sweden, from Canada, and other parts of the New World. But this need not be a permanent condition, as thousands of acres of land which are now almost idle might be profitably employed to grow this class of timber. The seeds of all the genus are securely imbedded in the cones, and in some cases are very difficult to free.

The cones should be collected in late autumn, and stored in a dry warm place, in boxes, such as that over the hot-water boiler, where the temperature is regular and dry. Thus treated the scales of the cone will split open, and the seeds will generally be freed, if the cone be taken in the hand and struck sharply at its point on some hard substance. Having fanned away the scales and abortive seeds, the rest may be sown in light peaty soil, in an outside pit, protected in bad weather by reed or straw movable lights, or if there is much quantity the seed may be sown in

once into beds in the open air. In the case of the Larch, Scotch Fir, and other hardy kinds, this is preferable, but the exotic species need some kind of protection.

The small seeds of the Larch separate freely from the cones, if these be kiln dried; but for a small

without so resinous that it is often imperative to saw them through in the direction of their axis, to get out the seed; while in contrast to this, the seeds of the Araucarias are as large as Brazil-nuts, and come freely from the immense cones, by simply drying them gradually. These seeds are edible when cooked like

will descend into the soil; but the first young shoot will often not appear till the following year, or it may even take eighteen months to show itself above the level of the soil. As soon as these attain to 4 inches in length they may be lifted, and either potted at once into single 3-inch pots, or into stores, viz., 5 or 6 inch pots, placing four to six round the outside; and again, they may be quartered out in nursery beds at once. If potted singly, take care they do not get corkscrew-rooted, and are shifted into a larger-sized pot as soon as the roots touch the pot.

It may be here noted that the seeds of Conifers do not do well as a rule if covered heavily with soil; half an inch deep will be ample for most kinds, but for the small light seeds of the Thujas and Cypresses, half this depth will suffice. The surface of the soil should be covered with moss or Cocoa-nut fibre, to keep the soil uniformly moist and warm. It is better not to use artificial heat, though the gentle warmth of a spout hot-bed will do no harm, especially when the seed has been three weeks or a month in the soil.

The Lebanon and Deodar Cedars are both raised from seed in nurseries, but it is rare, at any rate, except in the south, for good, ripe seed to be produced, though I have seen some fully-matured cones in Sussex and Kent. Cephalotaxus, Juniperus, Podocarpus, and Taxus, are usually treated alike when raised from seed. The berries are gathered when quite soft and ripe, and either rubbed in sand to get rid of the sticky pulp that envelops the seeds, or dried, and then sown thickly in boxes and pans, the first method being the quicker of the two, and certainly preferable for the Yews, the berries of which are very full of a sticky, sweet juice, that makes them attractive to birds, especially the thrush tribe.

Varieties of Conifers do not reproduce themselves true from seed, so that if it is desired to perpetuate any one form, the only sure way is to graft, or to raise it from cuttings or layers. Experience.

(To be continued.)

LATHYRUS SPLENDENS.

This handsome creeper has been in flower for some time past in the Cape House at Kew, where its brilliant scarlet flowers attract much attention. It has been likened to a Sweet Pea, but to our thinking is more like the perennial Pea. It is a native of California, and is known as the "Pride of California." For the specimen whence our illustration (fig. 106) was taken, we are indebted to the authorities at Kew.

CASTLEROY, BROUGHTY FERRY.

A SHORT climb, a week or two since, brought me to the summit of Castleroy, the residence of Mrs. Gilroy, where the scent of the sea and the odour of the Austrian Pine and spring flowers saluted me. The sea is about a quarter of a mile distant. Castleroy, a handsome modern mansion, is about 150 feet above sea-level, and commands distant views. It is unsheltered from either the north or the south; and the chief portions of the gardens are on the crest of the brae or hill, and these are fully exposed to the wind on either side of the incline. When it is known that this exposed garden stands on an impenetrable stratum of rock, the wonder increases that so many crops and plants are found in such fine condition.

The whole of the soil has been carried up by the present gardener, and for twenty years or more the garden has been in course of construction, and much of it, previous to planting, has had to be made again and again, because trees and shrubs, after being established, have had their leading and other shoots snapped by the wind, or have been torn out by the roots. Disasters such as these have, however, neither daunted the courage, nor exhausted the resources, of Mr. Dickson, the gardener, who has won many striking victories over the elements on this bleak hill-top during the last twenty or more years.



FIG. 106.—LATHYRUS SPLENDENS: FLOWERS SCARLET (KEW).

quantity one may use a large earthen pan, into which put the mature cones in a thin layer, and then place the pan on the hot-water pipes in a forcing-house, when the scales will split asunder, and the seeds will fall into the pan; but be careful to avoid over-heating, or the germ may be killed.

The cones of some of the Abies, notably Webbiaana and grandis, are not only very hard and compact, but

Chestnuts over a slow fire, and, according to Humboldt, form the staple vegetable food of some Indian tribes. The best way to put these into the soil is to hold them by the thick rounded end between the finger and thumb, and to push the pointed end into the soil as thickly as the cook puts raisins into a pudding, at an angle of about 45°. The radicle in three weeks or a month, according to the freshness of the seed,

For example, most cultivators prune their shrubs and trees to improve the beauty or convenience of their sky-lines, enhance their fertility, or support or enhance the effect of surrounding objects. But Mr. Dickson's first necessity was to prune his plants, so as to reduce their size, and render them less liable to injury from the storms. Conifers and other plants, lifted and planted intact, are often swept clean out of the soil; hence, branches and stems are reduced, and soil is heaped over the roots of the trees to more than average depth, this additional mechanical weight affording increased anchorage to the roots.

I noticed an excellent method to secure a maximum of shelter at a minimum of labour. In all gardens there is waste, and its final destination is the fire heap. At Casterley, every form and variety of waste was and is converted into shelter. Prunings, up-rooted, diseased trees or shrubs, and rubbish of all sorts, are built up into banks or rough boundary lines, and made thus to furnish the ever-desired shelter at exposed points, earth being freely mixed with this debris, and trailing plants set out, as well as annuals sown or planted, so that some of these shelters are objects of beauty of a very original character. Much skill and forethought are also displayed in the selection of the best sites for fruit trees and bushes, vegetables, and flowers; and the space being limited in extent, the utmost is made of it by means of walks, shrubberies, lawns, flower-beds, and borders; and so well have these features been planned and carried out, that, exposed as the site is, there are few days in the year that some sheltered spot cannot be found for exercise or repose in the open air.

Within a few yards of each other in these gardens, the most perfect shelter and the most desolate exposure may be found. The views are wide and pleasing, and take in the mouth of the Tay and the open sea. Far away on the land side is a narrow fertile plain, backed by mountains in the distance. On the highest point of the ground towards the centre, what is known as the Dalkeith curved group of beds is placed; and mainly furnished with hardy *Chrysanthemums*. Near here, too, is a Rose arbour, in which the hardier Teas and other Roses, including Turner's Crimson Rambler, thrive. Roses also grow well in other parts of the grounds, while just over the hill the Broughty Ferry Rosary of the Messrs. Crolls may be said to join the picturesque and beautiful gardens of Casterley.

The growth of trees is somewhat slow, especially after they reach a height of 20 feet. Most of them hesitate to go higher, because of the wind, and the result is peculiar; other leaders rushing up to the front, where the first have been arrested, being stopped in turn. Hence the tendency of most of the trees to spread, instead of growing upwards. Mr. Dickson put the matter yet more pithily, by remarking that of those at Casterley, "the Weeping Birch went straight up the best."

The Austrian Pine is by far the best Conifer, but it is very difficult to keep erect when it gets to a large size. Several other Pines do fairly well, but none approaches the Austrian as a wind-resister, and it seems to thrive on the salt spray, and only suffers check or wreckage from the strength of the wind above and the lightness of the soil below, as already described.

Spruces and Silver Firs will only grow when they are young, and surrounded by other trees, and are of no use alone, the exposure killing them, the common Spruce being as bad as the rest. Of deciduous trees, the two best are the Oriental Plane and the Weeping Birch; the Beech, purple Beech, Roman or Mountain Ash, Service-tree, Norway Maples, Geans, Prunus Pissardi, and others, also thrive fairly well. Horse-Chestnuts and Limes also grow pretty freely, but the Chestnuts especially look weather-beaten after a few severe tussles with the wind and the brine.

The Sweet Bay, and varieties of Cherry Laurel, such as *rotundifolia* and *colchica*, Mr. Dickson considers his most valuable evergreens. He propagates and plants these by the thousand on banks, edges of shrubberies, and as undergrowth or shelter to other trees or shrubs. Their shining green leaves seem wholly indifferent to the fiercest winds and the

sea-spray, and I have never seen a finer, healthier stock of these two Laurels than in this wind-swept garden.

The Holly is perfectly hardy, but grows slowly. Rhododendrons are not a great success, owing chiefly to the dryness and thinness of the soil, 18 inches to the solid rock being a fair average.

All Weigelas grow freely, and make a brilliant show in season. The Mock Oranges grow freely, and bloom profusely. Spiræas, all the shrubby species do well, *S. arifolia* and *S. Lindleyana* especially so, and they are grown extensively. The beautiful New Zealand shrub, *Olearia Haastii*, is quite at home, and reaches its highest beauty in August; it may safely be added to sea-side plants anywhere, and will make a splendid companion to the Sea Buckthorn. The *Ailanthus glandulosa* grows rapidly, and looks well, headed down to the ground every year. *Lasratusius* lives and grows, but never blooms—altitude too high for it. *Cupressus* of sorts are fairly hardy, but need the shelter of other trees.

Of American *Arbor-vitæ*, there are several of the varieties which do well, and furnish valuable plants for clothing the ground in winter. Several *Retinosporas* thrive well in a young small state. *Dimorphandra manschuricus* has fine foliage, and thrives in these gardens. *Diplopappus chrysophyllus* thrives and blooms beautifully here every year, as does also the all-to- seldom-seen *Colutea cruenta*. It should be stated in connection with these and other shrubs in these gardens, that Mr. Gilroy, the son of the present owner, travels a good deal abroad, and makes large collections of plants, trees, and shrubs for Casterley Gardens.

Fruit, flowers, and vegetables, inside and out, are well grown in these elevated gardens. There are also a large conservatory and greenhouse, and two lofty rooftery vineries, span-roofed, 80 feet long, 15 feet high, and 21 wide. One is furnished with Hamburgs; the late-house, with Lady Downe's, Alicante, Trebbiano, Gros Maroc, and Gros Colmar. The Vines have seen many fine crops, and are still vigorous and healthy. If there are to be any Diamond Jubilee Medals this year, and they are given to those who have vanquished the greatest difficulties in commanding horticultural success, surely Mr. Dickson has earned high honours for making this wind-raked, sea-washed crown of Casterley rejoice and blossom as the Rose. *D. T. F.*

LILIUM HARRISII AND THE ELECTRIC LIGHT.

At a recent meeting of the Horticulturists' Club of Cornell University, Mr. G. Kains presented notes of experiments with the Easter Lily. As to the effects of the electric light in its cultivation, he said that the bulbs were potted in the middle of October, plunged in a solid bed late in December, and the electric light turned on January 1. A globeless arc lamp was used. It burned from 5 P.M. until 6 A.M. daily for the following four months. The bed was divided into three sections. The first was exposed to the full glare of the naked light; in the second, the light passed through a large pane of glass, which cut out some of the ultra violet rays, but did not impede the passage of the light; the third section was separated from the light by a black canvas curtain, which was drawn across the bed each night before the lamp was lighted. When the light was first turned on, the plants were of uniform development, but in six weeks change appeared in the foliage, which gradually became more pronounced. The plants in the lighted sections grew very tall and spindling, had long peduncles, narrow and saw-green, very much curved leaves, far apart on the stems. These effects were most apparent under the naked light. The plants in the unlighted section were more robust, had deep, glossy-green leaves, were more stocky, less subject to disease, and, on the whole, more evenly developed. After the buds were formed these differences did not become more pronounced, but the buds under the naked light soon began to show a dark brown streak on the surface most exposed to the direct rays from the lamp, and this burn increased

as the buds grew and expanded into blossoms. The seared petals were much more curled than is ordinarily the case with healthy blossoms, and the stripes of brown were in some cases a quarter of an inch wide on each of three petals. No such trouble was experienced with the plants in the light which had passed through the pane of glass. The earliest flowers appeared on plants in the naked light, and in this section they lasted on the average nine days. Four days later the plants in section two flowered, and lasted here nine and a half days. The plants in the unlighted section were nine days later than those in section two in coming into blossom; but the flowers, though slightly smaller, lasted eleven days, and were more robust. The flowers in the lighted sections, like the plants which bore them, were spindling, but not unsightly, excepting those which were burned.

A plant with two remarkably evenly developed stems was taken from the unlighted section, and so placed that the curtain could be drawn between them, the one stem being in the unlighted section, the other among the plants behind the pane of glass in section two. A second twin-stemmed plant was also taken from the unlighted plot and placed in the naked light, but the larger of the two stems was covered each night with a tube of manilla paper to exclude the light entirely. In each case the stem in the light blossomed a day before the other stem. Some other plants of uniform development were marked, and a part of them removed to the lighted sections, the others being left in section three. The former blossomed seven days before the latter, the last blossom in the former group being three days earlier than the first blossom in the latter group. The blossoms were perfectly healthy, and lasted as long as those in the unlighted section. From these experiments it is concluded that it will probably pay commercially to use electric light in cultivating *Lilium Harrisii* when the buds are an inch long, in order to hasten their expansion, and that the light must pass through glass to avoid burning the petals. *S., in Garden and Forest.*

PROGRESS OF THE CYCLAMEN.*

On the occasion of the discussion on "Variation in Plants and Animals," which took place on February 25, 1895, it occurred to me that it might be useful to give an illustration of the amount of change which had been effected in a plant by continuous selection under cultivation in a comparatively short time. I, therefore, placed upon the table an example of the wild and of the cultivated form of the garden "Cineraria" (*C. cruenta*).

The choice of this species was purely accidental. It was, however, violently impugned. It was contended that the garden Cineraria was not the result of the development of a single species, but that it was of multiple origin, and the result of the intercrossing of several species. It was further contended that its change from the wild form had not been gradual, but by discontinuous steps or "sports." Neither contention seemed to me well founded. But I admit that, owing to the lapse of time since the so-called "improvement" of the Cineraria commenced, it is impossible to give formal proof that the process has been what I described. Mr. Darwin met with the same difficulty. He remarks: "We know hardly anything about the origin or history of any of our domestic breeds."† As is, however, well known, he regarded them as the result of accumulation by selection of successive slight variations. But he also tells us that "the chance will be infinitely small of any record having been preserved of such slow, very ing, and insensible changes."

It seemed to me important, therefore, to obtain the history of some cultivated plant which would not be open to the objections urged in the case of the Cineraria.

After some consideration, I selected the plant known in gardens as *Cyclamen persicum*. Owing to

* "The cultural evolution of *Cyclamen latifolium*, *Sibthorp.*" By W. T. Hisseton Dyer, C.M.G., C.I.E., F.R.S. Read March 15, 1897, before the Royal Society.

† *Origin*, 8th ed., p. 29.

the kindness of the skilful horticulturists who have worked upon it, I am able to place on record a nearly complete history of the changes it has undergone.

The genus *Cyclamen* belongs to the order Primulaceæ, which in its affinities is somewhat isolated. *Cyclamen* itself is distinguished from the rest of the tribe Lysimachieæ, to which it belongs, by the reflexed segments of the corolla.

Cyclamen persicum, Miller, is a name given by gardeners to a form slightly modified by cultivation of *C. latifolium*, Sibthorp, a species confined to Greece

and Syria. vated forms in existence are descendants from this one individual. The assertion cannot be proved, but is not improbable; it is known to have been a variety with white flowers. As will be shown, the forms now in cultivation have been derived from a white-flowered one, which in turn might well have been derived from the Lille plant.

Such a modified form was, in fact, that described by Miller, in 1768, in the eighth edition of his *Gardeners' Dictionary*, under the name of *Cyclamen persicum*. He describes the flowers as "pure white

Early in the century some colour variations were in cultivation. Several as well as the typical *C. persicum* were figured in the *Flore des Serres* in 1877, t. 2345. These record the amount of change from the wild type which had been accomplished in a century and a half. One striking seminal sport (*C. persicum*, var. *laciniatum*) is figured in the *Botanical Register* in 1827, t. 1095. It is remarkable for spreading corolla segments broader than usual, and cut at the edges. It does not appear to have been perpetuated, but in some degree it anticipated some of the remarkable modern developments.

I am informed by Mr. James Martin, the accomplished propagator of Messrs. Sutton, that the recent remarkable development of the *Cyclamen* began about 1860, and, at any rate in their hands, started with the old "crimson and white." It will be seen from the accompanying figures how little this differs from the wild type. Fig. 107 represents a flower of the latter from a plant imported by Messrs. Sutton from Syria after six years of cultivation; it is not appreciably altered. Fig. 108 represents a flower of their "crimson and white;" it only differs from the wild type in having shorter, broader, and less twisted corolla segments.

In considering the progress which has been made since 1860 under the skilful hands of Mr. Martin and others, it is important to bear in mind that there is no question of hybridity. *Cyclamen latifolium* has resisted every attempt to cross it with any other species. We are dealing, then, with the evolution under artificial conditions of a single species. Further, in the following statement, I have confined myself to the result of continued self-fertilisation, and have not thought it necessary to investigate the results of crossing races which have assumed characters more or less distinct.

Stc.—Mr. Martin strongly insists on the principle laid down by Mr. Darwin from de Vilmorin, that "the first step is to get the plant to vary in any manner whatever." As Mr. Martin puts it, "the breeder must work with nature." It is his practice to seize the smallest deviation, even so small an indication as the slightest difference in a cotyledon of a germinating seed. The first direction of work would, however, for commercial purposes, be to develop the size of the corolla. Messrs. Sutton have sent me photographs of the largest flowers hitherto produced by them. [We give at fig. 109 an illustration of real size of a variety recently exhibited. Ed.] These represent the continuous work of forty years. As the work was not done for a scientific purpose, the whole of the progressive steps have not been preserved or recorded. But Mr. Martin denies that they have been attained by other than progressive selection, or that they have been reached by leaps and bounds. In developing any particular character it is, to use his own words, always done by a "ladder," i.e., continuous self-fertilisation and selection. One stage owes its preservation to its having retained fragrance. Beyond this stage fragrance has been lost.

An interesting question is whether there is any limit to the extent to which an organ can be developed, and if so, what? It is to be hoped that Mr. Martin will continue his work in this direction, and strive, if only as a matter of scientific interest, to increase the size of the corolla to the maximum possible. The only check will probably be found to be the general balance of nutrition.

Spreading.—I was much struck to find amongst a magnificent series of specimens, kindly sent me by Messrs. Sutton, forms with the segments of the corolla spreading instead of reflexed. I have received even more striking examples from Messrs. Hugh Low & Co. This is remarkable because, as I have already pointed out, the latter is a distinctive generic character in *Cyclamen*. Although the alteration in the appearance of the flower is enormous, the structural change is slight; it is merely a matter of direction of growth. It amounts, however, to the loss of a generic character, and a reversion to a more generalised type. The change is therefore essentially atavistic.

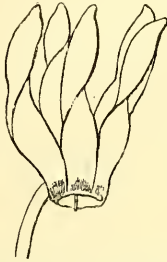


FIG. 107.—FLOWER OF IMPORTED CYCLAMEN AFTER SIX YEARS' CULTIVATION.



FIG. 108.—MESSRS. SUTTON'S CRIMSON AND WHITE CYCLAMEN.



FIG. 109.—A GIGANTIC CYCLAMEN.

(Shown by the St. George's Nursery Co., at the Royal Horticultural Society's Meeting, March 1st.)

and Syria. There is a good figure of the type in Sibthorp's *Flores Græcæ*, t. 185; it has pink flowers, with a ring of darker colour at the throat. The species is said to have been first cultivated in Europe at Lille in 1731,* having been introduced from Persia. There must have been some error as to its origin, for Boissier points out that the species is not found in that country.† In all probability it was obtained from Syria. The Lille plant ultimately went to Ghent, and it has been asserted that all the culti-

with a bright purple bottom" It was figured in the *Botanical Magazine* in 1787, t. 44, and it has come down little altered to our own day. In 1875 Boissier describes it as "forma hortensis a me nunquam spontanea visa." It still exists in cultivation, and is the (old) "crimson and white" of Messrs. Sutton. It seems always to have been popular in cultivation on account of its agreeable fragrance. This confirms the Syrian origin of the original stock, for a white-flowered form "is found in Palestine which is very fragrant."*

* *Le Semaine Horticole*, 1807, p. 25.
† *Flore Orientale*, vol. 4, p. 92.

* *Royal Horticultural Society Journal*, N.S., vol. 12, p. 165.

* *Animals and Plants under Domestication*, vol. 2, p. 512.

I was unable to obtain from Mr. Martin any explanation of how this particular variation had come about, but he informed me that it had been of frequent occurrence. Spreading flowers had always been destroyed as departing from a desirable type. More recently, on account of their Orchid-like habit, they had taken the popular fancy, and had been preserved.

Doubling.—Even in the wild type there is a tendency to a slight multiplication of the corolla segments. Mr. Martin has worked upon this, and has produced flowers [semi-double]. He seems to think that there is no limit to which this multiplication cannot be carried practically, and hopes in time to produce "mop-headed" flowers like a *Chrysanthemum*. The so-called doubling of flowers, as in the Rose, is a teratological phenomenon, and is due to the conversion of stamens into petals. But in *Cyclamen* this is not the case. The stamens, which are normally equal in number to the corolla segments, are also multiplied. Although a quinary symmetry is general in the Primulaceae, *Trientalis*, a near ally of *Cyclamen*, ordinarily exhibits a considerable range in the number of parts of the flower. Here again *Cyclamen*, under artificial conditions, shows a reversion to a more generalised type.

(To be continued.)

NOTES FOR AMATEURS.

INDOOR PLANTS.—Under this title, I wish to speak especially to those who have not even a veranda or cold frame, and are obliged to grow their few flowers in the parlour or office. How many are disappointed after buying a fine Palm or variegated *Aspidistra*, to find that it soon slowly dies, and its beautiful colours fade away. This gradual dwindling is principally owing to the conditions under which the plant grew before it was brought into the house. It assuredly developed rapidly in a high temperature, with abundant moisture; and then found itself suddenly deprived of elements which influenced its life and growth, so grew yellow, dropped its leaves, and at last died.

When seeking an indoor plant, it is well to get it direct from the florist, choosing it not from a hot-house, but from a greenhouse, wherein the temperature more closely approximates with that to which it will afterwards be subjected. It is not wise to select from plants grown for market, as these are usually raised in quantities, or are unduly forced with heat, and manure, being suitable as temporary decorations, but not for permanent indoor plants. The grower is not concerned if a plant, when once sold, lives but a month afterwards.

The flower-lover should select a dwarf specimen, free from defects and blemishes, rejecting "drawn" plants with over-long and weak stems. What is the right course to pursue with indoor plants? What are they to do? Should they be re-potted or manured to make them do well? No; the plant should be kept just as it is when it comes from the florist's greenhouse.

It should neither be forced nor retarded, as for one perfectly-grown plant we find many poor, weakly, stunted ones. The first consideration is usually what quantity of water to give each week. The watering of indoor plants is a difficult question, requiring much care, as on it the life and beauty of the plant depend. Usually the air of living-rooms is dry and warm, and much of the water given is absorbed by the surrounding air; also, there may be a fire burning. The drainage of the flower-pots may or may not be efficient. The earth also may be porous or heavy, compact, and scarcely permeable. The rule is to water plants when they are thirsty. Partial watering is to be avoided, as then the upper part alone is wetted, the soil appears moist, but below where are the roots, is dry, sometimes in a sandy state, which it is impossible to moisten. The plant will suffer less from lack of water than from a continual excess of dampness. If too dry, its whole appearance shows it, it lacks vitality, but the would-be gardener knows the remedy, most plants (*Ferus* excepted) regaining their natural condition after copious watering. With excess of water the roots rot, the soil becomes sour, and the whole thing a mass of mud, the plant certainly dying unless returned to the florist to be started again.

It is a mistake to remove the drainage from the bottom of a pot; the more perfectly the stones act, the better will the roots thrive.

Beside such indoor plants as *Chamærops excelsa*, *Aspidistra lurida* and the variegated variety, *Agave robusta*, *Phœnix reclinata*, and *Aralia Siskindii*, there is one good greenhouse plant with fine foliage, which is very rarely seen, in spite of its hardiness and endurance. This is *Lomatia ferruginea*, which may be compared to *Lomatia filisifolia*, with dentate foliage, very sturdy for indoor cultivation. *Louis Gentil, Kew.*

THE WEEK'S WORK.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower, B. Inford, Dorking.

Cattleya Luddemanniana (*speciosissima*) and its several varieties, are essentially late summer-flowering plants, but being a comparatively shy species to bloom, it is frequently disappointing to the cultivator. No difficulty is experienced in getting the plant to grow freely, but when treated as other *Cattleyas*, it seldom shows any inclination to flower, and although the leaves and pseudo-bulbs produced under such conditions are large, they are not of a sturdy character. After being rested during the past winter months, the plants will now be making numerous roots at the base of the last made pseudo-bulb, and this is the best time to re-pot the plants or afford them some fresh rooting material. Shallow pans with perforations around their sides are preferable, as they afford a convenient means of suspending the plants from the roof. Afford liberal drainage, as this species may give water more frequently during its growing season than most *Cattleyas*. The compost should consist of equal parts of peat and sphagnum-moss. Pull the peat in pieces, and sift out the greater part of the dust through a coarse meshed sieve, cut up the moss roughly, then mix the two ingredients well together, and work in with it a few clean crocks. Suspend the plants in the Mexican or *Dendrobium*-house, where they will obtain plenty of air and direct sunlight. *C. Luddemanniana* produces its flower-spikes on the completion of its growth; and if no spikes appear at that stage, the plants should be subjected to the ordinary resting system.

Cattleya Eldorado and its varieties, splendous, *crata*, and *Wallichii*, should be during the months of July and August, a period when other *Cattleya* flowers are scarce. Like the preceding species, the flower-spikes come up together with the new growth, and push up out of the sheaths just before the pseudo-bulbs are made up. The blooms, when open, have a delicious fragrance, and if placed in a dry atmosphere, they will last in beauty for several weeks. At the present time the plants are starting into growth, and should be placed in the East Indian-house, or an ordinary plant-stove, and they will need to be shaded from strong sunshine. During the earlier stages of growth, afford just sufficient water to prevent the compost from becoming dry, any excess at the root at this period frequently causing the young growths to turn black and decay. When the flower-sheaths are seen pushing up, afford water more freely, but the quantity should be diminished gradually after the first blooms open, and only enough being given to prevent the stems and leaves from shrivelling. Re-potting is best done immediately after the flowers fade.

Laelia rubescens (acuminata) and *Gouldiana* being now at rest, should be placed where a little more warmth exists than that of an ordinary greenhouse, but with more air and less atmospheric moisture than is given to any *Orchid*-house, very little water being needed at the root to keep the pseudo-bulb plump; and even if they are allowed to shrivel slightly, it will do no harm.

Cyrtopodiums.—Such large and distinct looking *Orchids* as *C. Andersonianum*, *C. Siantlegianum*, *C. punctatum*, *C. Ericsoni*, *C. macranthum*, and *C. suavisimum*, are deserving of extended culture, their tall branching spikes producing numerous showy flowers, which open continuously for several weeks in succession. These species are now commencing to grow, and if necessary, they may be re-potted, but plants that are showing their flower-spikes should not be disturbed until the spikes are out. Use fibrous loam and coarse sandy peat in equal parts, to which may be added some leaf-soil and sphagnum-moss. A gentle drainage may be provided, and being best-loving plants, they should be placed in the highest available temperature, and where they may obtain plenty of sunlight at all times. When the growths are completed, the plants should be placed in a warm sunny greenhouse, so that the pseudo-bulbs may become thoroughly ripened.

Dendrobiums.—*D. cymbioides* now commencing growth may be re-potted or top-dressed. Cultivate the plant in a shallow pan, and suspend it close to the roof-glass in the *Cattleya*-house. *D. Bensoni* is fast pushing forth both young growths and flower buds from the last-made pseudo-bulbs, but the grower should not be tempted to afford the plant water until after the flowers fade, as the young growths are liable to damp off from over wetness. The same remarks are also applicable to plants of *Dendrobium transparens*, *D. crystallinum*, *D. tortile*, *D. amicum*, *D. aqueum*, *D. Dalhousianum*, *D. Parishii*, and its varieties.

Platycoleis, bifloris is generally grown in too great heat, so becoming a prey to red-spider. Although it is a native of the Philippine Islands, the atmosphere of the East Indian-house appears unenitiable to it. The intermediate or shady part of the *Cattleya*-house is the best place for it at all seasons. Suspend the plants close to the roof-glass, but out of the course of the currents of dry air from the top ventilators. On clear and bright mornings it is good practice to take the plant down and slightly bedew the grassy foliage over with tepid rain-water. The plants are now starting to grow and throw up flower-spikes in conjunction with the young breaks; and from this time until the growths are fully completed, abundance of water at the root and in the atmosphere is necessary. Re-potting is best deferred until after the flowers fade. *P. glauca* may be afforded plenty of water now to assist the proper development of the current season's growth.

THE FLOWER GARDEN.

By CHARLES HEARIN, Gardener, Dropmors, Maidenhead.

Ornamental Plants intended for damp situations in the pleasure-ground, or where the garden actually grows very free, if planted out early this month: clumps of Bamboo and similar plants from the open may be safely transplanted. In sheltered dells, or upon the margins of lakes and by the side of streams, Bamboos in variety are appropriate subjects. The soil best suited for hardy Bamboos is that of a rather heavy nature, and one capable of retaining moisture, although stagnant water about the roots should be guarded against, and where likely to be too wet slightly raised mounds should be thrown up on which to plant them. The following are some of the handsomest and hardiest to be seen: *Arundinaria japonica* (*Bambusa Metake*) is a good grower and hardy, although it does not form so handsome a bush as some other species. *A. Simoni* is a strong and erect grower, established clumps growing to a height of 10 feet to 15 feet. *A. nitida*, a species with bright green foliage and very hardy, grows to a height of about 10 feet. Other handsome species are *Phyllostachys Henonis*, *P. flexuosa*, *P. nigra*, *P. aurea*, *P. nitida*, a tall and erect-growing Bamboo, and *P. viridis glaucescens*, a tall free-growing one, and one of the best for general planting. *Bambusa palmata*, dwarf in growth than most of the preceding, is distinguished by its broad and Palm-like foliage. Other plants suitable for these situations are *Kodgersia podophylla*, *Heraclium giganteum*, the giant *Cow Parsnip*; *Arundo conspicua*, *Glycerium argenteum* (*Pampas-grass*), and *Elymus glaucifolius*.

Roses.—The cold nights, accompanied with north-east winds, have prevented free growth in *Roses* on walls, and when thus stunted the shoots are more liable to the attacks of green-fly. If this is already in evidence, the trees should be well syringed with some approved insecticide—such as Bentley's *Quassia extract*. This remedy being prepared in a concentrated form, can be readily diluted by simply mixing it with the desired quantity of clean cold water, and for syringing *Roses* and other subjects infested with green or black aphid, it is a cheap and efficient insecticide.

General Work.—This is a busy time in the flower-garden department. Propagating of such subjects as *Heliotrope*, *Ageratum*, *Nasturtium*, *Coleus*, and others that form roots quickly may still be practised in any hot moist loam or frame. *Alternantheras* should be dibbled in thickly in frames on a hotbed and a little light soil, where, if kept close, they will strike in a few days, and the tops may be taken off in a week or ten days and be struck in a similar way. The gradual hardening of the young plants generally must receive due attention, as the timing of putting these out into the beds is now approaching. The inclement weather by day, and the frosty nights, have necessitated considerable care, and no tender plants should be left exposed at present, especially when coming fresh from under glass. Annuals sown in frames or small

boxes should not be allowed to become matted together and drawn up, but be pricked off singly before overcrowding takes place. Early sown Carnations should now be ready for planting into the borders, and seeds may yet be sown for a late supply of plants. Border *Crysanthemums* may also be planted out, and if they have been previously hardened off properly, a slight frost will not injure them.

THE KITCHEN GARDEN.

By W. POSE, Gardener, Highclere Castle, Newbury.

Potatoes.—The early crops in pits and frames will now be nearly over, and any that remain and are naturesd sufficiently may be lifted, and stored in a cool, dark shed, until required for use; the frames may then be utilised for Cucumbers, Melons, or Dwarf French Beans, which, if sown now under glass, will come into bearing some time before those already planted outside. Aschleaf, and other early sorts of Potatoes now showing through the soil, should be hoed through to check seedling weeds, and loosen the soil, preparatory to earthing up the crop, which should be done when the plants are about 6 inches high. Any artificial manure it is intended to apply to these is best put on before the first hoeing, scattering a handful or so round each plant, according to strength of the manure. In the case of sharp frosts, sometimes experienced during the thid & 4 weeks in May, protection of some sort should be afforded, such as a doubled herring-net, stretched over, but clear of the tops.

Chicory.—A few rows of the improved form of Chicory, known as Whitehead, should now be sown. If this be done too early in the season, flower-stems are thrown up in the autumn, but at this season it is quite safe to sow. Any fairly rich soil is suitable, provided it be not shaded by trees. The rows may be 15 inches apart, thinning early to 6 inches from plant to plant.

Eradine.—If Eradine is likely to be required early in the autumn, a pinch of seed should now be sown very thinly in shallow drills; and when large enough, transplant the seedlings carefully on to rich soil, in an open situation, at 9 inches to 1 foot apart each way. The Round-leaved Batavian is the most useful, though by some the Moss-curler is preferred.

Pickling Onions.—To obtain small Onions for pickling and other purposes, sow a small quantity of seed now on land that has been made thoroughly firm by treading. The seeds may be sown broadcast, and rather thickly, covering them with half an inch of fine soil, after which roll or beat down firmly. The Silver-skin and the Queen are the best varieties. Thinnings from the main bed also form useful bulbs for this purpose if dibbled in thickly together in poor soil.

Kidney Beans.—A good sowing of these may now be safely made in the open, the increasing warmth in the soil being conducive to the germination of the seed. Plants from this sowing will be quite safe from the late spring frosts. Any that may be showing through the soil must be given some kind of protection in all except the most favoured localities. As a guard against cold winds, a few leafy twigs, stuck along one or both sides of the rows, will be of service. Plants raised under glass for planting out, must be kept fully supplied with air, tying each to a stake as growth advances, and shifting them into pots a size larger if likely to become pot bound. A good breadth of Canadian Wonder may be got in where Dwarf Beans are appreciated, or in places where Runners may not succeed. In such cases, the Climbing French Bean may be recommended, not being a tall grower, and as affording a longer succession of large handsome pods of the same type as the dwarfs.

FROITS UNDER GLASS.

By F. HANST, Gardener, Easton Castle, Ledbury.

Succession Pines.—These plants, having now a good root-hold in the new soil after re-potting, and being in active growth, should, in order to ensure robust and sturdy growth, have every attention in regard to airing and affording water at this stage, for giving first-class fruit, no after-methods of cultivation remedying spindling of the leaves. Never allow the plants to get very dry at the roots, or premature fruiting may occur; on the other hand, a very moist state of the soil must be avoided, the main point in their culture being plants furnished with large quantities of healthy roots. The time at which the house is closed should be made later by a few minutes each week; the ventilation must also be increased, and a moister state of the air maintained by sprinkling the paths, &c., the plants being bedewed at closing time if the day has been very hot. In some sunny parts of the country a slight amount of shade in the middle hours of the day is necessary.

Suckers.—These, if now making growth fast, must be afforded ample space for the due development of the leaves, or drawing will take place, and be afforded more water at the root, the small amount of soil in the pots soon drying up in hot weather. If the stock of suckers is less than the requirements of the place, and strong suckers are available, a few may be detached from the parent-plants, and potted.

The Early Peach-house.—The fruits will now be approaching ripeness, and if lime exists in the water syringing with it must be discontinued; but if clear rain-water be available it may be used, placing it in the house a few hours before using. Let all the leaves be drawn aside from the fruit, or removed where shading it unduly, for often a single leaf will spoil the otherwise fine colour of the fruit. Keep lateral pinches at a joint or two. Ascertain if the border is sufficiently moist, and should it be getting dry, afford water abundantly, which will suffice till the crop is gathered. On warm, sunny days afford air abundantly, especially if the houses are flat-roofed; for unless this matter be closely attended to, the fruit will be apt to get scalded on the sunny side. To prevent this, where the lights are movable, pull down each alternate light so as to let the air into the middle of the house. In houses of this sort, the thermometer is not a trustworthy guide on a hot day, as it will probably hang below the trees. To pass the hand through the tree, and between it and the glass is a better test, as the warmth there felt will be very different from that indicated by the thermometer.

PLANTS UNDER GLASS

By G. H. MAYCOCK, Gardener, Luton Hoo Park, Luton.

Abutilons for Winter-flowering.—Plants which were struck from cuttings in the autumn will now be so well rooted as to require only to be in their flowering-pots. For these a compost should be used of equal parts loam, peat, and leaf-mould, with sharp sand in liberal quantity, and small quantity of small lumps of charcoal. If the flower-house is small one, pots 8 inches in diameter, will be a suitable size. The potting-soil should be placed round the ball firmly, and to do this a wooden rammer should be used, the soil being merely made somewhat compact, but not rendered impervious to water, as some beginners are inclined to make it. The plants being re-potted, remove to a warm house, and keep them in well syringed; and about an inch or two deep in a deepish border garden-frame, plunging the pots to the rim in tan, cinders, &c. During the autumn the lights may be drawn off altogether, in order to mature the wood, and prevent over-luxuriant growth; and it being essential that the wood be well ripened to have plenty of flower in the winter, the plants must have a sunny position. The plants require stopping twice or thrice whilst making rapid growth. For furnishing large greenhouses and conservatories, older plants will be found better than young ones; and, assuming these were pruned hard back in the spring, growth will be more promising. These larger specimens do well if they are planted out in the open ground when all danger of frost is past, that is about the first week in June. In order to obtain good growth, trenches may be made as for Celery, in the sunniest part of the garden, and in these place some of the soil of which the plants are given above. The plants should be set out at 3 feet apart, and afforded some slight protection against the wind for about a week. Let the plants be well syringed in fine weather, and supplied with water until the soil is getting dry. Under any sort of treatment, the plants will grow to a large size by the middle of the month of September. At that date a bright spade should be pushed down round each, so as to prepare them for lifting and potting about the end of the month, or sooner should the weather become cold, and if the plants be afterwards well shaded for a week or two, and the lifting has been carefully done, very few leaves will be lost, or the plants suffer in any way. Abutilon *Boule de Neige* is one of the best for winter flowering, Canary Bird and Yellow Princes are also fine varieties.

Hard-wooded Plants.—These plants of whatever genus should not be allowed to suffer through inattention at this season, and the small plants in pots which will flower in the autumn and early winter months, should be potted and tied-out, and afforded ample space to grow, otherwise the lower branches will be much weakened or killed. Plants of large size should be turned round, at the least twice a week. In the case of *Ericas*, a watch must be kept for mildew, which if found to be present must be dressed with flowers-of-sulphur, first spraying the plants with a fine-rose water can, to make the sulphur adhere.

In twenty-four hours the sulphur should be removed by the syringe, laying the plants on their sides, to prevent it being washed into the soil. Red-spider soon spoils *Phloxes*, often before it is detected, and a close examination of these plants should be made at short intervals of time. Fresh air should be admitted in increasing volume, and in all cases the plants should be thoroughly moistened at the roots when water is needed. *Correas* and *Eriostemons* should be well syringed, and in general treated similarly to *Bornias*, *Tetrathecas*, &c.

Greenhouse Climbers.—The shoots of all climbers should be carefully trained, and the growth of old-established plants assisted with weak liquid-manure. *Lapagerias* should, as regards the young growing shoots still springing up from the roots, be kept free of slugs, either by dusting with Tobacco-powder, or protecting the young growths by means of cotton-wool, using the fluffy parts of it round each growth; a search should also be made every night for them. Syringe the foliage daily with rain-water, and fumigate the plants, to make sure that no thrips harbour on them.

THE HARDY FRUIT GARDEN.

By H. W. WARD, Rayleigh, Essex.

Thinning-out the Fruits on Peach Trees.—Healthy, fruitful trees invariably set heavy crops of fruits if the blossoms are protected from the frost, and severe thinning of the fruits becomes necessary. A knowledge of the size to which the fruits of the several varieties attain under good cultivation is desirable in the part of those entrusted with the operation. Fruits of such varieties as Alexander, Waterloo, June Amstel, Hale's Early, Stirling Castle, and Bell-garden, being of medium size, may be left a couple of inches closer on the trees, say, 10 inches apart at the time of thinning, than fruits of Royal George, Violet Hâtive, Prince of Wales, Chancellor, and Teton de Venus; whilst such large-growing varieties as Barrington, Golden Eagle, Exquisite, Princess of Wales, Late Admirable, Sea Eagle, and Salway should be afforded still more space on the trees. Therefore, thin out fruits upon the varieties indicated to 5 inches, 6 inches, and 7 inches apart, according to size, reducing the numbers by one-half a few weeks later, leaving, as a matter of course, the most-extended and best-placed fruits to form the crop on each tree. The fruits left should be 2 or 3 inches clear of the nails (where nails and shreds are employed to secure the trees in position on the wall), in order that the individual fruits can obtain to full dimensions without coming in contact with them. Much injury is caused through insufficient space being allowed for the fruits to swell to full size without touching the nails.

Protecting Strawberry Flowers.—Garden netting, which is used to preserve ripe Strawberries and other fruits from the ravages of birds, may be applied with advantage to preserve the open blossoms from the effects of late frosts. Place a few forked sticks into the ground at short intervals in breadths of Strawberry plants to be thus protected, so as to keep the netting clear of the blossoms. If the netting be doubled or trebled in thickness, it will necessarily be more effective. A thin covering of straw would also have the desired effect.

Watering.—Owing to the dry winds which have prevailed during the last few weeks, surface rooting fruit plants like Strawberries and Raspberries, which are growing in light and perhaps shallow soils, should be well watered at sufficiently short intervals to maintain the ground about the roots in a moist condition. Wall-trees occupying south-west and east aspects should also be given attention in this direction.

VALUING NURSERY STOCK.

In the article by Mr. Freeman, Q.C., on "The Humours of Arbitration," in the first number of the *Land Magazine*, there is a story of a counsel who was examining a nervous expert in the valuation of nursery stock. The witness was hostile, and counsel took him through the list thus: "What do you put down for the *Platyedon Marisii*?" "It did not know." "Really? Well, what for the *Eceromorphus* reaber, the *Leptostichon androsceus*, or the *Echeveria secunda glauca*?" "I'll not answer. Counsel went on: "I'm afraid you're not much used to valuing plants! At least you know the *Lophospermum scandens*?" "No." "Nor the *Matricaria eximia corymbosa*?" "No." "Well, what do you know? Do you know a Cabbage?" "Witness (in despair): "Yes, thoroughly." Counsel: "So I thought!" At this point the jury intimated that they were thoroughly satisfied about the claim.

EDITORIAL NOTICES.

ADVERTISEMENTS should be sent to the PUBLISHER. Letters for Publication, as well as specimens and plants for naming, should be addressed to the EDITOR, 41, Wokington Street, Covent Garden, London. Communications should be written on ONE SIDE ONLY OF THE PAPER, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith. The Editor does not undertake to pay for any contributions, or to return unused communications or illustrations, unless by special arrangement.

Illustrations.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, &c.; but he cannot be responsible for loss or injury.

Local News.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturalists.

Newspapers.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY,	MAY 18	{ Somerset County Agricultural Show, at Minehead (2 days).
WEDNESDAY,	MAY 19	{ Royal Botanic Society, Summer Exhibition at Regent's Park.
FRIDAY,	MAY 21	{ Royal Botanic Society, Lecture.

SALES.

WEDNESDAY,	MAY 19	{ Japanese Lilies, Carnations, Greenhouse Plants, Gladioli, &c., at Protheroe & Morris' Rooms.
FRIDAY,	MAY 21	{ Imported and Established Orchids, at Protheroe & Morris' Rooms.

AVERAGE TEMPERATURE for the ensuing week, deduced from Observations of Forty-three years, at Chislewick.—55°-4°.

ACTUAL TEMPERATURES:—

LONDON.—May 12: Max., 49°; Min., 37°.
PROVINCE.—May 12 (6 P.M.): Max., 50°; Valencia; Min., 36°; Sumburgh Head.

The Consular report for the past year on dairy and vegetable farming in the district in France of which Cherbourg may be taken as the centre, and drawn up by Mr. M. C. GURNEY, the present consul, seems to be exciting a good deal of attention in this country, and with much reason. In showing how great is the success of the French dairy farmer and market gardener, the consul reads the English and Irish farmer a lesson, which we, in our monthly stock-taking paragraph endeavour to enforce. Now and again we tell of enormous imports of dairy-farm stock. Mr. GURNEY, in the report for 1896-7 tells the full tale, for which we have no space here, but which the Board of Agriculture would do well to curtail and scatter broadcast over the length and breadth of the land. This we say advisedly—having the idea that only in this way can the most be made of the valuable services of such a man as Mr. GURNEY. The full report can be had from Messrs. EYRE & SPOTTISWOODE, East Harding Street, London, E.C., for the low price of 2½d. One or two extracts on subjects akin to our programme may be permitted here. The first is connected with fruit gardens, &c.:—

'The mild climate of La Manche has enabled nursery gardeners to thrive.

Fruit (Pears, Apples, and Strawberries) is exported from this consular district. Cider Apples go in large quantities to South Germany for the German bottle cider trade 'Apfelwein.' Thus French Apple-juce finds its way to England, America, and even Australia, *via* Germany. Could not some of this trade be diverted to the south-west counties of England? Do our farmers in this also need teach-

ing? This district has a special school where instruction in cider-Apple growing and cider making is given.

I know of an English nursery gardener who annually tours through my district, and comfortably picks up all the young shrubs and plants he requires at very low cost and with very little trouble, owing to his perfect knowledge of the French language and commercial methods. This enterprising Englishman is, indeed, a remarkable exception.

It may be asked why does he come to France to stock the shrubberies and parks of our homes in England. Because labour is cheaper and prices are absurdly low, and the profits he makes more than cover the outlay on his annual trip across the Channel, combining in his case, pleasure with profit. If the home supply is insufficient could not the demand be supplied in our southern home counties?

Even Mistletoe by the 100 crates goes to England at Christmas time from Cherbourg and Granville.

This consular report is of general interest, an excellent sample connected with Potatoes, &c., may be cited as proof:—

'Potatoes of the earlier sorts sold well, and made money for growers, the exporting season lasting over two months. Prices for kidneys averaged about 12 fr., and for rounds 6 fr. The Myatt's being somewhat of a failure owing to drought, the Flukes and Royals yielded the bulk of the crop. Any increase or deficiency in this crop from year to year does not point to the falling-off of the cultivation, but simply to the fact that the weather has been unfavourable to the crop.

On the contrary, the cultivation has gained ground, and is likely to continue to do so, for the farmer in this district has copied the Jerseyman, and now sees the wisdom of growing Potatoes for the requirements of the English market. There are, however, many places to which this culture may extend, in spite of the distance the farmers have to cart.

Some of the earliest came from near, or towards, Caen, and it seems strange that no enterprising shipowner has started a steamer for this trade during the Potato season. A vessel of light draft and sufficient horse-power would certainly pay, in spite of the entry to Cancale being a little difficult at some tides, if the business were carried out in conjunction with a firm here, who would collect the produce. The first consignment of Potatoes for England left here, *via* Southampton, on April 29, 1896.

There has now been formed at St. Malo a syndicate for the purpose of opening a regular marketplace for the Potato trade, where merchants will buy the produce instead of, as hitherto, all having different stations on the various roads leading to St. Malo-St. Servan.

In this report Cauliflowers are included, the cultivation of which, as a second crop, after Potatoes, &c., has been very successful for the last two seasons, selling at prices varying from 40 fr. to 12 fr. per 100 heads. The largest are preferred in Paris, but the medium-sized heads go to England. The railway tariff has been reduced so as to put St. Malo on the same footing as Roscoff, in Finistère, for many years producing this vegetable. This culture is capable of large development.

Pigs are almost all exported to the Channel Islands, though a few go to England when pork is cheap. This year it has fallen to 40 fr. per 100 lb., a serious matter for farmers. Small pigs sold for little or nothing during 1896."

It may be added that Mr. GURNEY invites communication by letter from all who desire to have further instruction in the various subjects reported upon by this excellent public servant.

A Vanished Lily.

CONSIDERING the beauty and variety of newly introduced Lilies now in cultivation, it is not surprising that a comparatively unattractive and critical species, should have been lost sight of, though it may still exist in some

old gardens. We allude to *L. peregrinum*, Mill., which Count SOLMS-LAIBACH has lately rescued from oblivion.*

This Lily was introduced into northern Europe early in the last quarter of the sixteenth century, and it is described and figured by a number of authors of that period. It is included in GERARD'S *Catalogus Horti*, &c. (1596), under the name *Lilium album bizantinum*; and in the first edition of his *Herbal* (1597), p. 146, it is figured side by side with *L. candidum*. Concerning these two Lilies GERARD says:—

'The White Lily of Constantinople hath very large and fat leaves, like the former, but narrower and lesser. The stalk riseth up to the height of three cubits, set and garished with leaves, also like the precedent, but much lesser. Which stalks oftentimes doth alter and degenerate from his natural roundness to a flat forme as it were, a lath of wood furrowed or chanced alongst the same as it were ribbes or welts. The flowers growe at the top like the former, saving that the leaves doe turse themselves more backward like the Turke's Cap, and beareth many more flowers than our English white Lillie doth. Our English white Lillie groweth in most gardens of England. The other groweth naturally in Constantinople and the parts adjacent, from whence we had plants for our English gardens, where they flourish as in their owne country."

He further gives the distinguishing characters of the two species as we have quoted them, the description being further worthy of note as descriptive of a fasciated stem. Fasciated stems are common in Lilies, and they were observed by our forefathers, for at p. 151 of GERARD'S *Herbal* is a woodcut of "The great mountaine Lilly, showing such a 'stalk' which has turned from his roundness into a flat forme," as those of the white Lilly of Constantinople."

Count SOLMS has investigated the history of *L. peregrinum*, and, with one or two exceptions, which Mr. HEMSLEY points out, his account is complete and accurate. CLUSIUS, *Stirpes Pannoniæ* (1583), p. 137, gave an account of it, under the name of Sultan Zambach, which he reproduced in his *Rariorum Plantarum Historia* (1601), p. 135, together with a figure. In the meantime, LOBELIUS, *Plantarum seu Stirpium Icones* (1581), had published the very same figure, which figure, according to Count SOLMS, was really prepared for the *Stirpes Pannoniæ* of CLUSIUS (1583); but in the Kew copy of this work there is, as Mr. HEMSLEY tells us, no figure of *L. peregrinum*. On the other hand, Count SOLMS has overlooked the fact that GERARD published a figure of it in 1597. This figure is not from the same block as that of CLUSIUS and LOBELIUS; yet it is evidently a close copy. Respecting the present rarity of *L. peregrinum* in gardens, Count SOLMS states that the well-known Lily-grower, Mr. MAX LEICHTLIN informed him that he had never seen it. But there is some mistake or lapse of memory here, because, says Mr. HEMSLEY, there is an excellent cultivated specimen in the Kew herbarium received from Mr. MAX LEICHTLIN in June, 1875.

With regard to its claims to specific rank, opinions have differed. Linnaeus, *Species Plantarum* (1753), p. 302, makes it a variety of *L. candidum*, *horibus dependentibus*; whilst PHILIP MILLER, who knew it well in cultivation, maintained that it was a distinct species. In the first edition of his *Gardeners' Dictionary* (1731), he says: "It is now become almost as

* Eine fast verschollene weisse Lilie. *Botanische Zeitung*, 1897, pp. 63-70.

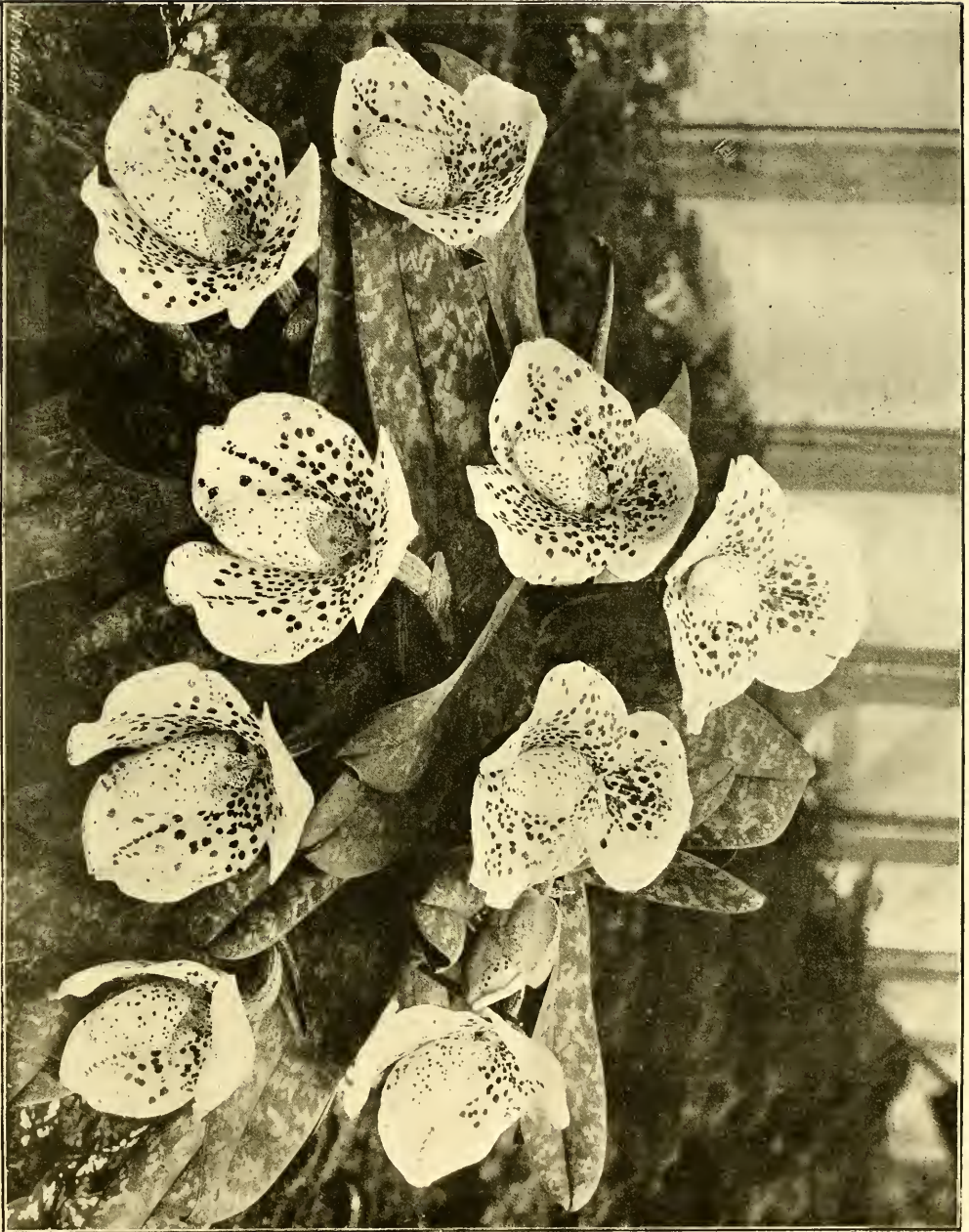


FIG. 110.—*OTHAROBOTUM BELLATULUM* IN MR. E. H. ADGON'S GARDEN. (SEE P. 321.)

plants as the common White Lily in many gardens." In the eighth edition (1768), where he first adopts the bi-nominal nomenclature, he states that it is undoubtedly a distinct species, differing from *L. candidum* in its slenderer stem, fewer narrower leaves, somewhat smaller, drooping flowers, having the petals more contracted at the base. Many authors, including ELWES and BAKER in this country, follow LINNÆUS; but, whatever rank it should take, there is no difficulty in distinguishing it. Perhaps some readers of the *Gardeners' Chronicle* may be able to give its correct history in this country.

It may be added, that the native country of the common white Lily was not known till comparatively recently, the Greek localities cited by BOISSIER being all cultivated spots. On the mountains of Lebanon, however, it occurs in a truly wild state.

CYRIPEDIUM BELLATULUM.—This, the most ornate of the section commencing with *C. niveum*, and continuing through *C. Godefroyæ* and its varieties, which merge into *C. bellatulum*, is always an object of admiration when it produces its quality-formed and finely-coloured flowers among its scarcely less beautiful leaves; but seldom does it attain such perfection as that of the fine specimen which gave material for our supplementary illustration, and which flowered some time ago with E. H. ANDOCK, Esq., of Ribblesdale, Dorking, an amateur who is specially successful with this class of *Cyripediums*, though it frequently proves intractable in some gardens. Various are the essentials prescribed for its easy culture—such as sandstone, or pieces of chalk mixed with the potting material—but practice proves in this case, as with many other reputedly difficult *Orchids*, that if a suitable position in a tolerably warm and moist house be found, they thrive without special treatment.

KEW: OLD CATALOGUES WANTED.—The Director of the Royal Gardens, Kew, would be obliged to readers of the *Gardeners' Chronicle* for assistance in completing sets of the descriptive Catalogues of Messrs. SANDER, St. Albans, and L'HORTICULTURE INTERNATIONALE, Société Anonyme, Brussels, for the library. Of the former all previous to 1891 are wanting, and of the latter those for 1892 and 1893.

THE CHISWICK GARDENS of the Royal Horticultural Society at the present time have a very satisfactory appearance. They are clean and tidy; most of the ground has been planted with one crop or another, and the rest is in a prepared state for later sowings. Many of the Fellows have not visited Chiswick since the last exhibition there, and since then very considerable alterations and improvements have been accomplished, which will undoubtedly have the effect of increasing the usefulness of the gardens, as well as being conducive to a convenient arrangement of the fruit-trees, and the orderly aspect of the gardens generally. It is gratifying to observe that as much of the space as possible is being given during the present year to trials of various descriptions. Thus, the trials of new and alleged superior varieties of culinary Peas occupy a considerable space, there being a row each of the varieties which, we believe, number considerably over six. Attention is also being given to the Potato, and many varieties will be tested side by side during the present season. In another part of the gardens, a few new varieties of Strawberries will prove their value in comparison with the best existing kinds; and later on, there will be extensive trials of annuals. We say extensive advisedly, for of Asters alone there are entered upwards of 100, though many of these will doubtless prove to be synonymous. The group of old fruit-trees that was known as "Rivers' garden" has been sacrificed, and the south-east wall which faces the spot, and was covered by old and comparatively worthless Pear trees, now supports a number

of cordon trees representing the finest varieties in commerce. Since the Plum-trees in the garden have all been transplanted into one piece of ground and arranged alphabetically, they are likely to be of increasing value for reference, as it will be a very easy matter to find a particular tree. Mr. WRIGHT intends to overhaul the small circular rockery in the near future, and take means to prevent the stronger-growing species from absorbing more than their share of the available space. Several rare species of *Prunus* have been planted there, presents from Sir J. T. D. LLEWELLYN, Bart. It is depressing to note the wholesale manner in which the fruit-buds have fallen from the Pear trees. From the exceptionally ungenial weather or other cause, many of the trees appear to be casting five-sixths of their buds, and the promise for Pears is bad. The usual exception, however, is to be seen in the case of Louise Bonne of Jersey upon one of the walls. These trees have set an uncommonly large number of fruits. Of Apples, the promise is better, and indeed very good. The Peach and Nectarine trees on the south wall have set excellent crops of fruits. The Vines in the large vinery are looking very well, and promise to give a good crop of medium-sized bunches of good Grapes; in the Muscat-house there is an excellent promise of an even and heavy crop. The very pretty standard Peach trees of moderate size in one of the houses are carrying a very satisfactory crop, and look most healthy. In one of the smaller houses is a collection of plants of the variety of Tomato raised at Chiswick last year, and known as Chiswick Red, from a cross between Comet and Peach. It was thought from the one plant that fruited last season to be a first-rate sort, and the plants are being grown to furnish seeds for distribution to the Fellows. Altogether, there is much credit due to Mr. WRIGHT and his staff for the present appearance of the gardens. The new house at the entrance is furnished with Camellias and other plants, and at present are but partially established.

"AIDE MEMOIRE DE BOTANIQUE CRYPTO-GAMIQUE," par HENRI GIRARD (Paris, J. E. BAILLIÈRE ET FILS).—This *Manuel d'Histoire Naturelle* is one of a series devoted to different branches of botanical and zoological lore. All these books are similar in aim, which is to present students with all the information possible in as small a space as possible. By mastering the epitomised and condensed botanical instructions herein contained, a superficial knowledge would be gained; but for those who prefer to work more slowly and thoroughly, a larger volume should accompany the smaller one.

"BOTANICAL MAGAZINE."—The May number contains coloured figures and descriptions of the following plants:—

Agave kevenensis Jacobi, t. 7532.—This is the finest and largest species known, and was recognised as new by General JACOBI at Kew in 1865. It did not flower till 1895, when it produced a panicle in the way of *A. americana*. The plant did not seed, and died after flowering, not before a number of bulbils were produced from the peduncle, so that it is hoped that a number of young plants may soon be distributed.

Macdillaria Houtteana, Reichb. f., t. 7533.—A species with an ascending rhizome, bearing elongated ribbed pseudo-bulbs, linear lanceolate leaves, and long-stalked starchy flowers, about 1½ inch broad, with ovate oblong acute segments, yellow externally, brownish-orange within.

Syringa amurensis, Ruprecht, t. 7534. A small tree, with all the appearance of a Privet, even to the flowers, but the fruit is not a berry, but a capsule, as in *Syringa*. It is a native of Japan and North China. It is a very handsome hardy flowering tree.

Dimorphotheca Ecklonii, D. C., t. 7535.—A suffruticose Composite, with obovate, oblong, sparsely-toothed leaves. The flower-heads are solitary at the ends of the stalks, each measures about 2 inches across, the ligules being spreading, of a violet colour beneath, white above, disc purplish. It was grown at Kew as a summer bedding plant.

Gomphocarpus selousii, R. Br., t. 7536.—A South Arabian *Asclepiad*, with shortly-stalked linear leaves, and pendulous umbels of small greenish flowers, with the peculiar structure of *Asclepias*, but destitute of the horn-like processes which emerge from the cup-shaped bodies which constitute the corona. Kew.

ROSE SHOW FIXTURES FOR 1897.—June 7 (Monday), Cambridge; 9 (Wednesday), Chelmsford; 15 (Tuesday), Ryde; 23 (Wednesday), Richmond, Surrey; 25 (Friday), Maidstone; 26 (Saturday), Dorking; 29 (Tuesday), Hereford; 30 (Wednesday), Ealing and Reading; July 7 (Wednesday), Hanley (two days), Leeds (three days); 8 (Thursday), Newcastle-on-Tyne (three days); 13 (Tuesday), Wolverhampton (three days); 17 (Saturday), New Brighton; 28 (Wednesday), Chester (two days). The above, together with those given in the *Gardeners' Chronicle* on March 20 and April 10, writes Mr. MAWLEY, are the only dates that have as yet reached him. He will be glad to receive any further fixtures as early as possible at "Rosebank," Berkhamsted, Herts.

NURSERY AND SEEDSMEN'S CRICKET.—We have received from Messrs. SUTTON & SONS, seed merchants, Reading, a list of fixtures for cricket matches taking place in the period between May 19 and August 23 of the present year, in which the A, B, and junior teams will play with a number of local and other south country clubs. There are in all forty matches.

MADAME ANDRÉ.—The name of this lady, the wife of our distinguished colleague and esteemed friend, M. ED. ANDRÉ, editor of the *Revue Horticole*, was, it appears, inserted in some of the lists of those who perished in the recent frightful catastrophe in Paris. We are thankful to learn that Madame ANDRÉ was not present on the occasion, although she had intended taking part in the Bazaar some days later, a circumstance which may have given rise to the rumour.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.—We are requested to state that the 58th anniversary festival dinner in aid of the funds of this Institution will take place on Wednesday, May 26, at 6.30 for 7 P.M. (the first day of the Temple Flower Show), at the Hôtel Métropole, under the presidency of the Right Hon. Lord ROTHSCHILD. As a large gathering is expected on this occasion, the Secretary, GEORGE J. INGRAM, 50, Parliament Street, London, S.W., will be greatly obliged if those friends who desire to be present will intimate their intention to him as early as possible, in order that the necessary arrangements may be made.

THE FLORISTS' TULIPS.—Although Tulips are employed largely in conjunction with other plants for creating a floral effect in our spring bedding, there is very little interest taken in the southern counties in the florists' varieties, and in their cultivation for show purposes. The attempt made to revive this interest by holding an exhibition and a Conference in the gardens of the Royal Botanic Society on Wednesday last was only partially successful, there being but one exhibit from an amateur further south than Cambridge. A report of the show is given in another column, and we shall publish next week a short summary of the papers read at the Conference. The Tulip has a life history full of interest, of which the average gardener might do worse than acquire a more intimate knowledge.

SUB-IRRIGATION FOR LARGE FOLIAGE BEDS.—To obviate the difficulties of watering a bed of large foliage plants, the experiment was made the past season of watering a large foliage bed from beneath in the following manner:—A circular bed, 22 feet in diameter, was prepared for sub-irrigation by removing the top soil to a depth of 16 inches, at which depth the subsoil was compact red clay. Three-inch half-round tiles in sections 1 foot long were laid over the bottom of the excavated circle. A line of the tile was first laid across the centre of the bed, the sections being placed 3 inches apart. At right angles to this, were laid branch lines, opposite the spaces

between the sections of the first line, the sections of the branch lines being placed close together. The outer end of the branch lines, and one end of the main line, were then closed with bricks, and at the other end of the main line a section of 5 inch tile, 2½ feet long, was set vertically, as an inlet to the system. The spaces between the sections in the main line were covered with pieces of tile, after which the joints were closed with cement. The tiles were then covered with well-enriched soil to a depth of 24 inches at the centre of the bed, and the surface was gently rounded to the border. The bed was sown June 1 with *Ricinus* at the centre, surrounded with a group of fifty robusta and fifty Crozy Cannas. Around this was a belt of eighty plants of *Caladium esculentum*, and these were enclosed with a belt of *Verschoffii* and Golden Bedder *Cocous*, and lastly the whole was encircled with a narrow band of silver leaf *Geraniums*. Rains came sufficiently often, so that no artificial watering was needed until June 24. On that day, and also on July 7 and 15, and August 6 and 21, water was supplied to the tiles from the Station irrigation system, until the soil of the bed appeared moist to the surface. The quantity of water required to thoroughly wet the soil was very large, amounting to in the neighbourhood of fifty barrels for each watering. How much of this water escaped through the subsoil we have no means of knowing. *F. Cranfield*, in "Gardening."

KINGSTON ON THAMES CHRYSANTHEMUM SOCIETY.—Judging by the schedule of prizes of the ensuing or twenty-first annual exhibition of this Society, to be held on November 9 and 10 next, the committee have wisely resolved to anticipate the year's falling off in subscriptions so generally expected, and have materially varied the prize-list in an economical sense. It has doubtless been disquieting to find that the balance held over from 1895 of £35 17s. 11d. should last year have become £3 less, and now this year's balance-sheet shows a present sum in hand of only £3 15s. No doubt the Kingston Society suffers materially because of the enormous growth and immense exhibitions of the National Society: and as if to accentuate this rivalry, we see this year the two shows again are to be held on the same days. The present schedule shows a useful reform in combining the Chrysanthemum plant groups with those of the miscellaneous order, and whilst giving undoubtedly better results, securing a saving of £9. Even the formal-trained plant classes are much cut down, effecting a saving of £10. This reduction will be no loss to the exhibition, seeing that in these days the public are chiefly anxious for cut flowers. Several fourth prizes in the cut-flower classes have been cancelled; but whilst the chief incurred classes remain as before, the twenty-four Japanese class has been converted into one for thirty-six blooms, with a moderate increase in the prizes. The twenty-four Japanese in the Challenge-verse class no doubt suffices for that number of these flowers. This vase is eagerly competed for, and still retains exceeding interest.

THE WEATHER IN THE NORTH OF SCOTLAND AND ABERDEENSHIRE.—With the advent of the month the weather in the north of Scotland has been of the most wretched description, fierce gales of wind, rain, hail, and snow having prevailed. On Friday, May 7, in some districts in the north-east of Aberdeenshire, the ground was covered with snow to a depth of 2 inches. Vegetation is generally from three to four weeks late; and should these cold, sleety days and nights continue, premature falling of the blossom is sure to supervene, while vegetation generally will receive a marked check.

STOCK TAKING: April.—The Board of Trade returns for the past month show a falling off in imports as compared with the exceptional returns for April, 1896. There has been a heavy falling off in raw materials for textile manufactures, especially in cotton shipments from the United States, and of wool. Food supplies of all kinds have much increased. Bacon, butter, cheese, eggs, sugar, are well to the fore, and dutiable articles make a very fine

show generally. Of course, the war in the East, localised though it be, is answerable for various instances of deficiencies, as for instance, Barley from Turkey; but other countries show so great a desire to do business on our markets, that "minus" returns are not worth recording in the feeding department. The following figures are from the "Summary Tables":—

IMPORTS.	1896.	1897.	Difference.
Total value ...	£ 35,808,500	£ 35,136,555	—£ 672,245
(A.) Articles of food and drink—duty free ...	10,377,028	11,752,101	+1,375,073
(B.) Articles of food and drink—dutiable	1,886,292	2,116,859	+230,627
Raw materials for textile manufactures ...	7,911,840	5,304,501	—2,607,339
Raw materials for sundry industries and manufactures ...	8,324,076	3,367,117	—4,956,959
(C.) Miscellaneous articles ...	1,201,650	1,058,629	—143,021
(E.) Parcel Post ...	74,301	73,141	—1,160

It may here be noted that the imports for the first four months of the year are placed at £152,964,781, as compared with £143,268,142—a gain of £4,838,639. By the way, the total value for the month of April was £35,136,555 against £35,808,500—a falling off of £672,245. The figures relating to fruits, roots, and vegetables are as under:—

IMPORTS.	1896.	1897.	Difference.
FRUITS, RAW:—			
Apples ... bush	93,224	836,354	+£43,040
Cherries ... ..	...	821	+821
Plums	15	—	—15
Pears	298	1,880	+1,172
Grapes	2,363	2,012	—291
Unenumerated ...	51,269	56,019	+4,759
Onions	333,640	437,217	+£83,537
Potatoes	63,439	85,167	+22,728
Vegetables, raw, unenumerated	£103,359	£135,240	+£31,881

Some of these figures are rather astounding; the value of the Apple import was increased by £57,670. Other totals are also very suggestive in their way. Proceeding to—

EXPORTS.

The month's business foots up at £19,700,122, and this, compared with the returns for the same period last year (£18,450,227) shows a gain of £1,249,895—distributed over all the sections in a very satisfactory manner. Woolens and linens have gone up for the United States in the exports, and though in India famine and disease still lay their paralysing hand on trade, other places manage to make up a good "covering," and leave a margin to the profit side of the account. Tinkering is still going on with the tariff of the United States; but their next door neighbour—Canada—is about to shift her business to the United Kingdom, doubtless a good termination on the part of the Dominion, which appears to have a great future in store. The trade with us in cereals and food supplies generally increases day by day, and it is known there is still some unappropriated capital in "the Old Country." It is worthy of mention that the exports for the first four months of the year have reached £78,998,309, as against £79,750,436—a decrease of 752,127. The reduction is not a very great one; it may as well be turned into an increase by next report.

"THE COUNTRY GENTLEMEN'S CATALOGUE."—This book, published by the Catalogue Publishing Company, Ltd, 49, Bedford Street, Strand, contains a great variety of useful and interesting information sandwiched in between an equal number of advertisements. By reason of its indexes the work is rendered useful for reference now, whilst it will prove a veritable mine to the historian of the future in compiling his review of the country life and its requirements in the last years of the nineteenth century.

"DICTIONNAIRE PRATIQUE D'HORTICULTURE ET DE JARDINAGE."—The 60th part of the French edition of what is called in common usage, *Nicholson's Dictionary*, is now published. It is mainly taken up with Roses and subjects relating to them, an indication of the thoroughness with which the book is produced. The publisher is OCTAVE DOIS, 5, Place de l'Odéon, Paris.

PUBLICATIONS RECEIVED.—New York Agricultural Experiment Station, Bulletin No. 116, January, 1897, *Report of Analyses of Commercial Fertilisers for the Fall of 1893* (Geneva, N.Y.).—From the Government Agricultural Experiment Station for North Dakota, *New Studies upon the Smut of Wheat, Oats, and Barley*, with a *résumé* of Treatment Experiments for the last Three Years, by H. L. BOLLEY.—U.S. Department of Agriculture, Division of Entomology, *A Study in Insect Parasitism*, by L. O. HOWARD, mentions many of the principal insect parasites, and their influence in reducing garden and crop pests.—*Agricultural Gazette of New South Wales*, February, 1897. The list of useful Australian Plants is continued, also there are notes on the Weeds of New South Wales, *Physiological Role of Water in Plants*, Entomology, and other similar subjects.—*Proceedings of the Agri-Horticultural Society of Madras*, October to December, 1896.—*Agricultural Journal, Cape of Good Hope*, March 18, is devoted to the interests of Fruit and Nut Culture, Stock-farming, Dairying, Forestry, Beet-Sugar Manufacture in America, and similar topics.—University Extension College, Reading, *Third Annual Report*, dealing with the field experiments on hay, pasture, Potatoes, Swedes, and Mangels carried out last year.—*Bulletin de l'Association pour la Protection des Plantes*, No. 15 (Geneva).—*Annali Agronomici*, April 25, contains several interesting papers.—*Bulletino della Società Botanica Italiana*, Nos. 2 (for February and March), and 3 (for April).—*Nuovo Giornale Botanico Italiano*, Aprile, contains articles entitled, *Prodromus Bryologie Boliviana* by K. MULLER; *Conifères de Chine*, by L. DEISSNER, and others.—*English Mechanic and World of Science*, April 16 and 30.—*Favourite Flowers of Garden and Greenhouse*, Nos. 35, 36, and 37.

NOTICES OF BOOKS.

THE FORCING-BOOK: A Manual of the Cultivation of Vegetables in Glasshouses. By L. H. Bailey.

The British horticulturist who consults Professor Bailey's recent work, *The Forcing-Book* (of the *Gardener's Series*) will find therein a great deal of new and sound practical information on the cultivation of vegetables under glass. Although the author treats of and records the results of experiments tried in several important agri-horticultural stations in America, the work, nevertheless, is one that we can confidently recommend to the notice of readers of the *Gardeners' Chronicle* who, by making due allowance for the difference in climatal conditions prevailing in the Corcell and other experimental stations in America and Great Britain, may easily apply, and practise in a modified form, many of the methods of procedure indicated in *The Forcing-Book* with advantage in British gardens, in which there is a growing demand for supplies of good forced vegetables.

The Forcing-Book consists of 279 pages, including five pages of index at the end, and thirteen pages of contents, and a brief but lucid preface. It is profusely illustrated, but by some oversight or other no index is given to the illustrations (eighty-eight in number), an omission which is to be regretted. Chapters are devoted to the construction of various kinds of forcing-houses and frames, bells and benches for growing the several kinds of vegetables on, heating, and cost of forcing-houses; management of the forcing-house, temperatures for the various crops treated of, and which are reliable and carefully arranged; soils for forced vegetables, the question of fertilisers, watering, ventilating and

The Forcing-Book, price 4s. net (Macmillan & Co., Ltd., New York and London).

shading, pollination, insects, and diseases. The remaining ten chapters are devoted to the forcing and general management of Lettuce, Cauliflower, Radish, Asparagus, and Rhubarb; miscellaneous cool plants, including the Pea, Celery, salads, pot-herbs, and Mints, Watercress, Parsley, Spinach, Dandelion, Mustard, Onion, Beets, Carrots, Parsnips and Potatoes. Tomatoes, Cucumbers, and Melons are accorded a good deal of space, as the importance of the crops entitles them to.

The cultural instructions on the Melon (reproduced from a paper read at one of the meetings of the Royal Horticultural Society in 1896), are identical with instructions given in the *Gardeners' Chronicle* from time to time during the past fifteen or twenty years, under the headings of "Melon Culture" and "Fruits under Glass." Good illustrations of Blenheim Orange, Hero of Lockinge, and Masterpiece Melons are given in pages 216, 217, and 218.

The Tomato (p. 153), the author says, next to the Lettuce, "is probably the most important vegetable grown in American forcing-houses. Its only close competitor for this honour is the Cucumber. Winter Tomatoes always find a ready sale at prices ranging from 25 to 75 cents per pound. Even after the Florida Tomatoes come upon the market in late winter, a good quality of house-grown fruits continues to sell well in every good market. The crop is one which demands a high temperature, an abundance of sunlight, and great care in the growing, but the profits, under good management, are correspondingly high."

Professor Bailey in referring to the importance of sunlight in connection with successful Tomato culture says, "The importance of direct and strong sunlight was well illustrated in one of our experiments. At one end of the house is a low building which shaded a part of the plants after 2 or 3 o'clock. The plants within 3 or 4 feet of this building, which were thus deprived of direct sunlight for half the afternoon, bore [as might be expected under the circumstances] no fruits whatever, although they were strong and vigorous. At 6 and 7 feet away some fruits were borne, but it was not until about 15 or 20 feet from the building that a full crop was obtained." We may say, that if Grape-vines, Peach, and other fruit trees were grown under similar adverse conditions as regards light and shade, the results in the course of a few years would be little better. With reference to "Soil and Fertilisers" (p. 154), the author writes, "Nearly all writers upon house-cultivation of Tomatoes assert that the soil should be only moderately rich, because heavily-manured plants are over-vigorous in growth, are generally unproductive, and are particularly liable to disease; and the additional cost of training is said to be considerable." "Our experience," writes Professor Bailey, "empirically contradicts this supposition. Heavily manured plants undoubtedly require more care in the pruning, and it is possible that when not properly handled they may be more liable to mildew, because of the dense and crowded growth; but, on the other hand, we always get the best yield from the strongest plants, and we find the extra cost of training to be of little account. We grow the plants in rich garden loam, to which is added a fourth or fifth of its bulk of well-rotted manure, and when the plants begin to bear, liquid manure is applied nearly every week, or a top-dressing of manure is given." In the matter of soil, our own experience teaches us that better results are obtained from plants potted or planted in rich garden loam, without the addition of well-rotted manure, or manure of any kind, as this would tend to the plants making a too luxuriant and sappy growth, resulting in a late show and setting of the flowers, and consequent lateness of crops. When the plants have set one or two clusters of fruits and onwards, is the time to apply frequent manurial dressings either in a liquid state or as a top-dressing, in order to assist the plants in the swelling and ripening of heavy and profitable crops of fruit without any fear of the plants making an unduly vigorous growth in consequence thereof. At p. 156, fig. 50, a good illustration is given of the early fruitfulness of Tomato plants

struck from cuttings and growing in a shallow trench or bed, the plants always evincing a disposition to fruit nearer the ground than seedlings; strong evidence this in favour of raising the plants from cuttings. These, if taken from the lateral growths or boxes filled with light soil, and inserted in heat and watered, will take root in a week or two.

In the pages (49 to 92) on the management of the forcing-house, are given sound practical instructions upon the culture of the leading kinds of vegetables under glass, as also are the results (in a tabulated form) of experiments with various kinds of artificial manures applied to Tomatoes, Lettuce, &c. *The Forcing-book* deserves a prominent place in every gardener's library.

GLEANINGS ON GARDENS.

This is the title of a book originally published in 1829, and now again privately printed for Arthur L. Humphreys, 157, Piccadilly. It consists in a number of observations, some more, some less pertinent to gardens, but so disconnected and fragmentary as to be of little use to the gardener. To those who want something to fill up their leisure time agreeably, we recommend the perusal of this unpretentious little volume, which will yield them many an interesting excerpt. The work has an index, for which the reader will be specially grateful.

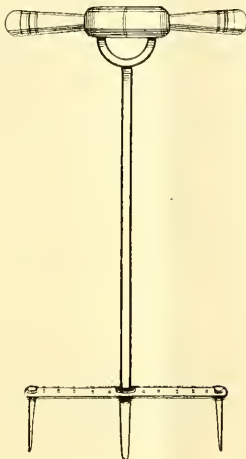


FIG. III.—DUNN'S TURF-CUTTER.

NEW INVENTION.

A NEW KIND OF TURF CUTTER.

We give a sketch (fig. III) of a very useful tool invented and patented by Mr. Dunn, blacksmith, Broxburn, near Dunbar, for restoring bare or worn patches on golf greens. Attached to the two ends are adjustable cutting-knives, which at their extreme distance cut with the greatest facility, on the principle of an auger, a circular turf of a maximum diameter of about 12 inches. This turf is transferred to the corresponding place on the green, and the identity of the size of both secures a fit so exact as to make the job much superior to spade work. It also enables the work to be more quickly done. On the Dunbar course, its success is described by members of the club to have been very marked. The greens have been repaired by its agency, and they are now in finer condition than ever before. The tool is a simple one, but the simplicity is its great merit.

HOME CORRESPONDENCE.

EEL-WORMS IN PASTURE.—In answer to the enquiry concerning this matter, it may be said that if the eel-worm is in the pastures, the infested turf should certainly not be used for potting purposes, or the peat may spread throughout the whole establishment. As a remedy to the pastures themselves, apply a dressing of 5 cwt. of kailot and 3 cwt. of basic slag per acre, mixed together; 1 cwt. of bone meal added in would prove an advantage. This manurial dressing would improve the pasture, and cause it to recover from the attacks of the eel-worm, but I do not say it would entirely destroy the pest. For potting purposes, take some of the turf, and after breaking up finely, mix in a manurial mixture as quoted above; keep separate from other soils, and watch the result upon the growing plants. A little sulphate of iron dissolved in the water for watering operations would assist the plants in overcoming the eel-worm. *J. J. Willis, Harpenden.*

METHODS OF PROPAGATION.—The articles by "Experience" in the *Gardeners' Chronicle* have greatly interested me, and illness has alone prevented me from earlier writing the few notes which I now venture to offer; as, valuable as are the various directions given, I much regret that "Experience" has not amplified some of his remarks, such, for instance, as the following: P. 271: "The Manetti stock is good for all classes of Roses." May I be pardoned for inquiring if "Experience" has ever seen a quarter of *Maréchal Niel* or *Gloire de Dijon* on the Manetti two or three years old? I am aware you may find beautiful plants the first year, but how about the following ones? P. 293: "Rhododendrons. There are grave reasons for the latter being increased by layers." May I ask why? I am under the impression that by grafting *Rhododendrons* on good stocks, one might buy the horse, while by growing in layers one could scarcely purchase the saddle! P. 293: "Rhododendron stocks should be grown one year in pots." I should like to hear the ordinary nurseryman's opinion of that expensive process, and whether the game would really be worth the candle. Perhaps some of your readers will kindly favour me with their ideas on this point. P. 432: "For the many fine varieties of Larch, as *Kempferi* (golden Larch), use the common Larch." Will "Experience" have the great kindness to tell me where a specimen of *Kempferi* grafted on the common Larch can be seen? I should certainly make a pilgrimage to it at once. P. 673: "Cotoneaster.—The most useful and showy is *Hookeri*, alias *Simonsii*, either grafted low, or about 2 feet high." Does "Experience" think it really worth while grafting this *Cotoneaster* when there is absolutely no difficulty in growing it 3 or 4 feet high in one season? I trust "Experience" will pardon my questions; but when one is blessed (or cursed) with an enquiring mind, it is difficult, on reading such suggestive articles as those on "Methods of Propagation," not to strive to go a little further, and learn a little more. *Charles Noble.*

— Allow me to reply if I can in the same spirit as Mr. Noble, prefacing my answer with the remark, that as my experiences are recollections of the past, it is possible, any possible, I may have made a few errors. Again, the articles were not written with the intention of teaching nurserymen of any standing, but young gardeners and amateurs. As regards *Maréchal Niel* Rose on *Manetti*, and *Gloire de Dijon* on the same stock: without reference to the article, I do not think I advised the use of the Italian stock, but recommended *De la Grifferaie* and "Napoleon." To answer the question as though I were before a bewigged judge, I have seen a quarter of two to three-year-old *Niels* and *Dijons*, buckled on the *Manetti*, but I cannot say they looked happy! As to *Rhododendron*: If Mr. Noble will refer he will find in that article I am only alluding to inside grafting. Later on, the grafting of *Rhododendrons* and other subjects in the open was dealt with. The "grave reason" for preferring layer plants is, that with such there is no danger of suckering. Who has not seen beds of *Rhododendrons* in which the stock (usually *R. ponticum*) has quite overgrown and killed the more delicate hybrid varieties, the average gardener and amateur not seeing the mischief until too late! The process I have indicated is the one usually adopted abroad, and yet the "foreigner" somehow manages to undersell the English nurseryman; and it can be done in the dead of winter, when the nurseryman is often glad to find an inside job for his

staff. Unfortunately, the pincium in which, unless my memory tricks me, could be seen two small specimens of Larix (Pseudo-Larix) Kempteri, is no more. These were not my own working, but came, I believe, from Messrs. Cripps & Son. One threw up suckers from the base, and this appeared to be a glaucous and vigorous form of Larix, not improbably *L. leptolepis*. Before I could determine with any degree of certainty, my knife-man took this growth, and it was burned with the rubbish. I do not grow much under my error, as I find scientists and professors are still undecided where to include *L. Kempteri*. I think amply worth while to graft *Cotoneaster Simonsii* on Thorn, as the stock imparts to the scion a short-jointed and compact habit, at the same time rendering it more fruitful. It is proposed to publish "Methods of Propagation" in book form, and I hope Mr. Noble will allow his notes to be printed with mine. I thank him for his friendly criticism. *Experience*. [These articles have been much appreciated, but will be none the worse for criticism. E. J.]

DAPHNE PONTICA is deserving extended cultivation. The delicious fragrance of its flowers, which are usually produced early in April, and continue in bloom for about a month, is not sufficiently known. In early morning and evening, bushes while in flower scout the air around for some considerable distance. For cutting purposes generally, the branches, with greenish-yellow flowers and foliage, of this *Daphne* are admirably adapted. The flowers keep sweet and fresh in water for about a week in an ordinary living room. A native of Asia Minor, and introduced as long since as 1719, it is quite hardy, at least in the south of England, and grows freely in any moderately light loam or peaty soil. It may be increased readily by layers, and grows to about 4 feet or more in height. *C. Herrin*.

GARDENERS AND THE DIAMOND JUBILEE.—The government has proclaimed that June 22 next shall be a general holiday throughout the kingdom. I have noticed that gardeners rarely enjoy, in relation to holidays, the privileges accorded to workers in other vocations. That may be better for them, or it may not. Everything depends on how the privileges are utilised. But, all things less, gardeners do feel that in regard to this matter they are not always treated quite fairly. If to keep June 22 as a general holiday is to exhibit true patriotism, then keeping gardeners at work all day will be unpatriotic. In any case, there can be no good reason for cutting off these workers from the privileges given to other workers in other vocations. This remark applies with equal force to the employes in nurseries and market-growing establishments. No doubt, in many directions the preparations for observing Jubilee Day will entail on those concerned unusual labour prior to its date; that is natural. But that supplies an additional reason why a holiday should be given to nursery or garden staffs on June 22. I have seen with much regret that two large semi-metropolitan shows are to be held on June 23. A very large number of nursery and garden employes will have perforce to be kept hard at work all Jubilee Day preparing plants, flowers, &c., and loading for these shows. Heads of firms and other employers, or head gardeners, might well in this matter show that they can be unselfish and patriotic by ignoring these shows, or they can give evidence they are not so by keeping their people at work all day preparing for the shows. *D.*

SOLANORA GRANDIFLORA Many of those interested in gardening have not probably had the opportunity of seeing this noble plant in flower, and were therefore surprised at the splendid illustration given recently in the *Gardeners' Chronicle*. There is a plant of exceptional size in the large Succulent-house at Kew. This handsome example is planted out in the large central portion of the house almost beneath the ridge. From the ground to the fringe of the house—a distance of 10 feet or 12 feet, probably—a woody trunk-like stem, the size of an average man's arm, has grown; and reaching the roof a head has formed, with branches extending both ways fully 40 feet. Close to the glass, with ample ventilation from large sliding lights, that at will may be run up or down, a thorough ripening of the extended growth is effected. During November last the plant flowered splendidly, and as I saw it on the 21st of that month, it was a most handsome flowering-plant. Too much prominence of such little-grown plants can scarcely be given, especially when, as is abundantly clear at Kew, they may be

grown to such proportions, and with such success, in a house comparatively cool and dry, as is the Succulent house in the Kew Gardens. *J.*

APPLE, BRAMLEY'S SEEDLING.—I have been much interested in the correspondence respecting this Apple, as I have lately planted both standard and dwarf trees. The standards are upon the Crab stock, and I planted them last autumn. The dwarfs are on the broad-leaved Paradise. I obtained them direct from Mr. Merryweather, and they were planted this spring. The trees are in the same plot of ground, the dwarfs about 20 feet from the standards, in shallow light loam over gravel, the whole of the very old thick turf having been dug in last summer. My object is to test both varieties on the Crab and the broad-leaved Paradise stock. If it would be of any use to the readers of the *Gardeners' Chronicle*, I should be pleased to report upon them later. *W. S. Bailey, Parkside Road, Hounslow*. [Kindly do so. E. J.]

BIRDS AND CHIMONANTHUS.—Have instances come under your notice of birds eating the young wood-buds of *Chimonanthus*? They have picked three parts of them out of our large plant of *C. fragnans grandiflorus* this year. I think tem-tents were answerable for the damage, but unfortunately did not notice it until the mischief was done. *Edie, Burrell*.

MODERN TREATMENT OF BULBS.—After reading the remarks on this subject at p. 308, it struck me that "Modern Stylistics of Flowering Plants" would have made a more fitting heading to Mr. W. Earley's note. To Mr. Jordan's method of storing in boxes and the like, I have nothing to say; but of the wisdom of lifting bulbs of *Narcissus* "early," and denuding them of every vestige of foliage to within "an inch of the top of the bulb," a good deal might be said that would place a very different glow of colour on Mr. Earley's remarks in your last issue. Does Mr. Earley intend in all sincerity to tell the readers of the *Gardeners' Chronicle* that the best beds of bulbs in the Regent's Park are achieved by such a method of debilitation as this? If so, I fear the proverbial grain of salt will be very necessary, wonder, too, what Mr. W. Barr would think of such a suggestion of mutilation amid the acres of *Dafodils* at Ditton. Obviously, in a public park such as the one named, there is a need for as early lifting as possible of all bulbs that occupy the beds, which, in the case of *Narcissus*, need not be, if these were planted deeply. It is, however, a totally different thing to advance what necessity compels as part of a perfected modern idea, or to infer that such treatment is either judicious or sound; much less that it is likely to bring the best results in any future year. *E. Jenkins, Hampton Hill*.

SWEET VIOLETS.—It has always been a special pleasure to discuss any matter horticultural with my old and enthusiastic friend and florist of world-wide fame, Mr. Henry Cannell, and I need hardly assure him in particular, and your readers in general, that in omitting Swanley White from my list, I had no intention of ignoring its merits—quite the contrary. For many years I have been assuring all whom it may concern that the two Violets, Comte Brazza and Swanley White, were one and the same, and for all practical purposes identical. Hence, all that I have said about Comte Brazza being almost the only white Violet worth growing, is equally true of Swanley Double Whites. Being the same in constitution, size, form, purity, of paper whiteness, of course the Violets are alike good under either name. I took some pains to settle the point years ago, and plants from the most diverse districts came quite true to character under either name. Not that selection of runners and methods of cultivation had no effect on the hardiness of the plants, their time of blooming, size, numbers, duration of the blooms they have; but this particular Violet, under either of its names, may be grown to flower as freely. I am, obliged for Mr. Cannell's latest contribution to the subject, and I am sure he will allow me to say that I was referring to single white Violets, and not doubles, when I wrote of some so-called white Neapolitan as of doubtful authority. And then there are Ransom's White, tinged with pink, and White Czar being back at times to purple, and re-burning probably to its white hue. And then among other doubles, Belle de Chateaux is not always pure white, and is of little use for quantity. The White Queen is fitted with rose, Queen of Violets tinged with violet-rose; and Parmacensis fore-pink, white, striped with rose.

Beautiful as several of these double Violets are they are spoilt for many decorative and market purposes by their tints or stripes of colour. Hence, we fall back on Swanley White, as taking rank with Marie Louise, De Parme, Neapolitan, &c. Readers will please to note that the two or more Violets that I bracketed as identical are in addition to the one double with two names—Swanley White and Comte Brazza—De Parme, Lady Hume Campbell, Marie Louise, New York, and Venice. May I also hope that Violet growers will not have their quaint and popular flowers grown out of character and size into Violets without a vigorous protest against a species of evolution that may not prove fruitful in pleasure or profit. *D. T. Fish*.

FRUIT PROSPECTS IN NORTH DEVON.—There are the worst that have been experienced for fifteen years. Peaches are blistered very badly—indeed, there is not one good set, even where double nets have been used over the trees. Pears and Plums bloomed well, but there is scarcely any fruit. Currants suffered badly from frost. The Apple-blossom suffered very much from the cold easterly winds, hail, and heavy rain, and it was injured very much in many cases whilst in the bud. It would be interesting to know if this failure extends very far. *G. S.*

BRANCHING TULIPS.—In the report of the meeting of the Scientific Committee of the Royal Horticultural Society, in *Gardeners' Chronicle*, p. 310, reference is made to Proserpine Tulip with an axillary flower. Will you allow me to point out that this is of very frequent occurrence with this variety, and a double variety named Titan. I send herewith a specimen of the former taken from a clump of six roots, of which three have produced an axillary flower. In the Penge Recreation Ground are two beds of the same variety, and in both several examples are to be seen. *S. B. Dieks*. [By no means uncommon, but we were not aware that the conditions occurred specially in particular varieties. E. J.]

CULTURAL MEMORANDA.

DOUBLE CHINESE PRIMULAS.

In April, cuttings are taken from plants that have been growing in a temperature of 50° to 60° during the winter, and are consequently in a suitable condition. The tops are cut off level with the soil, and the strongest selected and trimmed as cuttings, when they are inserted singly in 2½ inch pots, in a mixture of leaf soil, a little peat, with a free addition of coarse sand, the foliage tied up, and the plants well watered and plunged in the propagating case, where a steady bottom-heat is maintained, and a little air is constantly admitted at the back to keep the foliage comparatively dry, as the leaves, being hirsute, soon commence to decay if constantly wet. They are given excellent care in watering, and when the pots are fully full of roots, the plants are gradually prepared to withstand a lower temperature, till eventually they are transferred to a cold frame. The plants are then ready for a final shift from 2½ inch pots to 6 inch pots. Although I do not favour over-potting any kind of plant, in this case I make an exception, as I am convinced that the less frequently this subject is transferred from one pot to another the better. Of course, unusual care has to be taken in watering and the general management of the plants at this stage, but the results fully compensate for the extra labour and time. At the final potting, good leaf-soil is the material chiefly employed, with a small portion of loam, and a plentiful addition of coarse sand and charcoal; good drainage is essential. After the plants have been potted, the frame is kept close for a few days, when air is gradually admitted until the plants can bear full exposure, with shade from bright sun. During quiet rainless nights, the lights of the frame are removed altogether, the dew being very beneficial to the plants. When the nights become too cold for them to remain longer in the frame, they are transferred to a span-roofed pit, where the air is kept free and buoyant with the aid of artificial heat. During growth, any flower-buds that appear on the plants are promptly pinched off; but at this stage they will throw up their flowers *en masse*, the usefulness of which is beyond dispute. *W. H. Sharpe, Highwood Gardens, Rochampton*.

SCOTLAND.

NOTES FROM EDINBURGH ROYAL BOTANIC GARDEN.

Rhododendron Nuttallii.—Two plants of this magnificent Himalayan species are now carrying twelve trusses of their immense flowers, some of which are more than 4 inches across the corolla. They are white, with a tinge of pink, especially upon the outer surface, while the base of the inside of the tube is yellow. For large winter gardens it is an excellent plant, and its rather straggling habit of growth may be tempered by occasionally pruning the looser growths.

Tricuspidaria dependens under cultivation seldom grows more than a few feet in height. The stems are covered with brownish hairs; the leaves are serrated and alternate, dark green above and lighter beneath. The flowers are axillary and solitary, suspended upon peduncles about 2 inches long, the corolla being a deep blue-red colour. Several months intervene from their first appearance till they expand, but they last a good time after opening. It does not seem to become so easily established under cultivation; a cool greenhouse and a rather shaded position, with a peaty soil, gives fairly good results. If allowed to become dry, it is apt to be attacked by red-spider.

Erica Chamissonis, when well grown, is quite a charming plant for greenhouse decoration. It is compact in habit, seldom becoming more than a foot or eighteen inches in height, with very stem, clothed with immense numbers of light green leaves, about a quarter of an inch long. The small flowers are produced in great numbers, and the rose coloured, almost campanulate corolla, is made more effective by the chocolate-coloured anthers. Plants propagated from cuttings two years ago are now in full flower, and are about 6 inches high. It requires no more than the ordinary culture afforded Cape Heaths. A good figure may be seen in the *Bot. Mag.* t. 6108, where it is stated to grow at a considerable elevation near Grahamstown.

Terrestrial Orchids.—Among the most conspicuous in flower at the present time is *Ophrys speculum*, a native of Southern Europe. It is about 6 inches high, has flowers with greenish sepals and petals, but the lip is a combination of bright colours, of which the steel-blue of the disk is most prominent, edged with a gold band, the margin being mouse-pink. Another species is well figured in the *Gardeners' Chronicle* of 1872, p. 605, viz., *O. tenthredinifera*, from the garden of H.R.H. the Comte de Paris, where they were successfully cultivated. Several species of *Orchis* are also in flower, viz., *O. sarabuciana*, which bears an oblong spike of yellow flowers; *O. provincialis*, *O. morio violacea*, and one or two others. They are grown here in a cold frame, and plunged during their resting period in Cocoa-nut fibre. *R. L. H.*

LAW NOTES.

ROBINSON v. WARD, LOCK & Co. (LTD.)

The plaintiff in the above-named action, on the 2nd ult., obtained from Mr. Justice Kekewich, in the Chief Division of the High Court of Justice, an order perpetually restraining the defendants from printing, publishing, selling, or disposing of, and from advertising, offering, or exposing for sale any newspaper, periodical, or publication by the name of *Gardening Illustrated*, or by any other name so similar to *Gardening Illustrated* as to induce the public to believe that such newspaper, periodical, or publication is the paper published by the plaintiff.

SOCIETIES.

THE HAMBURG HORTICULTURAL EXHIBITION.

MAY 1 to 9.—Among the exhibits at the spring show, of which we last week gave some notice, were also the following flowering shrubs, Lilac, Laburnum, Prunus triloba, and others, from M. PE. PAULSEN; and a group of Palms, Tree Ferns, In arthropodium, and Cocoa Weddelliana from M. E. NISSEN, of Wandsbek.

M. KOSTER, Flair, of Boskoop, sent *Azalea mollis* (sinensis); M. BERNARD SPAAL, Liboedonia Dovianna; M. GOEPFEL, a fine group of Palms and Pandanus; and Madame W. D. HELL, Lilies of the Valley, growing under Dion spinulosum. M. CH. VUYLSTEKE exhibited some fine Palms; M. DEWESST PRÉRES, a New Zealand plant (new 1896); Katia Banchenberg, in good condition; M. SCHAEFER, Camellias; M. H. BEARDY, English Pelargoniums; Madame HELL, Pycnosperma Alexandra, a fine specimen; M. ERNST BERNAR, hybrid Cinerarias; and M. PETERSEN, some fine white and rose Hortensias. M. ERNST BERNAR also showed Cinerarias with large grandiflora, and some Colons, Japanese Maples, and Tulips.

In a gallery which might be called the Birch-room, being supported by trunks of this tree, and having its walls also covered with the bark, MM. GÖTZE & HANKESS, of Wandsbek-Marienthal, displayed Tree-Peonies, including the varieties Reine Elizabeth d'Italie, very bright red; Contesse de Reider, white and flesh-coloured; afro-sanguinea, and Louise Mouchelot.

M. FR. AD. HAAGE, JUU., had arranged in a Japanese style Hedera maderensis, Cerus, and Cacti; M. ENGELBRECHT, of Hamburg, sent some fine Caladiums; M. L. DUVAL & FILS, Anthuriums; and M. C. L. KRISSEN some more Caladiums, notably Roseus, Alboides, and Guaricana; M. DE SMET FRÈRES, hybrid Anthuriums; MM. DUVAL ET FILS, flowering Bromeliads, Vriesea corallina, V. Plumieri, and V. rex major; and M. L. DE SMET-DUVILLER, Caladium de Schroeder and Anturium Duvivierianum.

One pretty group included (from M. STOLPE, of Wandsbek) a fine collection of Orchids, including Nilonia Rosea, Lycaste Skinneri, and a variety with white sepals, petals very dark red, and a white lip; Cattleya Trianae, Sotroledum, S. albescens, Mendeli, intermedia grandiflora, Oncidium Leucobellum, and Bifrenaria Harrisonae. Madame W. D. HELL showed *Lilac purpurata*, *Warszewiczia discolor*, *Cypripedium calceolus*, and other queer Orchids.

FRAN VON DONNER, among other plants, sent a fine *Pritichardia grandis*, *Medinilla magnifica* with twenty racemes, *Caladiums*, *Orchids*, *Anthuriums*, *Helleborus*, *Alocasia*, *Berltonia*, *Bertertonia*, and *Sobralia usneifera*.

M. ALBERT WAGNER showed some fine Palms, among them *Cycas revoluta* with more than a hundred leaves; M. GOSCHKE, *Roseus*, *Alboides*, and *Guaricana*; M. DE SMET FRÈRES, including some excellent varieties; M. J. SCHMIDT, *Todea superba*; Mr. OSCAR TREFENHALL, a mixed group; M. G. PROHL, flowering shrubs; and M. A. J. PETERSEN, of Hamburg, pink Hortensias, dwarf, and well-coloured.

M. TILMANN also sent a fine group of Agave, Aloe, Dasylirion, Yucca, and other plants.

ISLE OF WIGHT HORTICULTURAL IMPROVEMENT ASSOCIATION.

MAY 8.—The monthly meeting of this Association was held at Ryde Town Hall on the above date, when an excellent paper was read by Dr. GROVES, Chairman of the Association, on "The Influence of Microbic Life to the Nutrition of Plants."

Previous to the meeting a large number of the members visited the Rev. H. F. WALKER's garden at his invitation, and were very much interested in the variety of things they saw. The following are a few of the many good things to be seen in bloom there:—*Paeonia Emodi* and *P. triternata*, *Camassia Leichtlinii*; *Artemisa chlorodes*, *Magnolia stellata* and *Lemni*, Himalayan *Rhododendron*, *Choisya ternata*, *Dodecatheon integrifolium*, *Rubus deliciosus* and *arcticus*, *Trillium grandiflorum*, and others; *Vallis spiralis*, *Gonum Hildebrandii*, *Euphorbia pilosa* major, *Cypripedium calceolus*, *Tulipa Greigi*, *T. turcica*, and others; *Morisia hypogaea*, and of the *Oncocyclus* Irises, *Iberica*, *Lupina*, and *Susiana* were beautiful, whilst several others were nearly out, as were also Iris, Kurokowi, and three or four varieties besides the type.

By permission of Mr. George HULL, of Appley Tower, many members visited the gardens at that place. The fine Oaks, Japanese Maples, *Azalea mollis*, and the fine specimens of *Choisya ternata* in full bloom were objects of much interest, as were also the magnificent Palms and Camellias.

ROYAL HORTICULTURAL.

MAY 11.—The last of the ordinary meetings of the committees previous to the gathering in the Temple Gardens on the 9th inst., was held on Tuesday last in the Drill Hall, James Street, Westminster. On such occasions there is usually a comparatively weak display, owing to the efforts of exhibitors to do their very best at the Temp'. Contrary to past experience, however, there was an excellent display on Tuesday of plants and flowers in season, but little fruit.

Conspicuous were the collections of Rose plants and blooms from several establishments. Roses have rarely been shown in the Drill Hall at an ordinary meeting to better advantage. The space occupied by Orchids was not greater than the average of the rest of the exhibits included a large number of Tulips, Gloxinias, hardy pines, sprays of ornamental shrubs, and miscellaneous subjects presented for Certificates. A very instructive Lecture was delivered during the afternoon by Mr. GEORGE MASSEZ of Kent, upon "Diseases of Plants," which was illustrated by lantern views.

Floral Committee.

Present: W. Marshall, Esq., in the chair; and Messrs. Jno. Fraser, C. T. Druery, H. B. May, H. Herbst, R. Dean, Jas. Hudson, Jno. Jennings, J. P. McLeod, I. S. Leonard, Geo. Nicholson, J. Fraser, R. M. Hogg, W. Bain, J. D. Pawle Ed. Mawley, J. W. Barr, J. Walker, H. J. Jones, D. B. Crane, E. Beckett, and Rev. G. H. Englehart.

MR. THOS. S. WARE, Hale Farm Nurseries, Tottenham, in a collection of hardy plants in flower, including a good representation of species in bloom during May. Most of these were shown in shallow earthenware pans, 15 or 18 inches across, that permitted of a number of small pots being plunged in Cocoa-nut refuse in them, thus obtaining a small group of each variety. Several Saxifragas were shown in this manner; also the blue-flowered *Silene prostrata*, prostratum, varieties of *Iris pumila*, *Asperula odorata*, a pretty white-flowering little plant, with scent of Hawthorn; the golden form of *Spergula pifera*, *Eriopus alpinus hirsutus*, *Alyssum sextatile compactum*, *Ranunculus pyrenaicus*, *Trillium europaeum*, &c. *Cypripedium montanum* and *calceolus* were shown, and many other pretty and rare species of hardy plants (Silver Flora Medal).

MESSRS. J. CHEAL & SONS, Lowfield Nursery, Crawley, made an exhibit of sprays of flowering and ornamental shrubs, conspicuous amongst which were the double white flowering *Prunus sinensis*, *Viburnum Lantana*, *Berberis vulgaris purpurea*, and *B. Darwinii*, and *Genista scoparia*, *Pyrus Malus floridula*, *Es. rufpa*, and others. Messrs. CHEAL also exhibited a few sprays of *Viola* in variety (Prize Banksian Medal).

Floral arrangements of cut flowers were shown by MESSRS. KEMP & WILSON, 85, Mortimer Street, W. Though not novel in design, the wreaths, crosses, sprays, and baskets were of much merit (Bronze Banksian Medal).

Some magnificent sprays of *Hyemodolis macrostephana* in a vase were shown by Mr. HUDSON, gr. to the Messrs. DE ROTHSCHILD, Gunnersbury Hoos, Acton. Being arranged tastefully, the exhibit was a most pleasing one.

Gloxinias were shown by Mr. JNO. R. FOX, West Wickham and Crofton, who had a group of plants in flower, arranged in a most interesting form, and a batch of those double Begonias in several varieties were of much merit (Silver-gilt Banksian Medal).

An Award of Merit was recommended to Lilac Senator Holland, shown by Sir TREVOR LAWRENCE, Bart., Burford, Dorset (gr. Mr. Bain). It is a double-flowering variety, produced in uncommonly large sprays.

MESSRS. JAS. VINEY & SONS, Victoria Flower Nursery, Chelsea, exhibited several *Stropeocarpos*, and were recommended an Award of Merit for *S. acuminifera*. The flowers are a pretty mauve colour, and in shape resemble those of an *Acemineas*; they are produced on rather long escapes, which branch considerably. It is the result of crossing one of the hybrids with the species *S. polyanthus*, and may be termed a capital break. Amongst other plants Messrs. Vitch exhibited *Cytisus bifida*, *Deutzia parviflora*, *D. discolor purpurascens*, with small flowers, the petals of which are distinctly purple on the exterior, *Oleandra indica*, and a batch of plants in flower of an effective Pelargonium named *Bryson*; also plants of *Deutzia hybrid Lemouinei*, *Rubus deliciosus*, and sprays of the handsome flowering *Libocedron Manglietii*.

A group of new perpetual-flowering pink "Diamond" was shown by Mr. B. LADAMS, Shirley Nurseries, Southampton. The flowers were pale, probably due to pasturing them. Some profusely flowered plants of *Rhax areana* provided an abundance of colour, which rather spoiled the effect of the Pinks.

From Sir WM. PEARSON, Bart., Faddockhurst, Sussex (gr. Mr. F. Capp), was exhibited a group, including some plants of a good strain of Gloxinias, and sprays of double Pelargonium flowers of several of the most interesting varieties, interspersed with Ferns (Vote of Thanks).

MESSRS. A. W. YOUNG & CO., Stevenage Nurseries, Herts, also contributed a group of Gloxinias. The cold winds had affected injuriously all such exhibits on this occasion (Bronze Banksian Medal).

Roses from Mr. MONTAGU of the Canterbury Nurseries made an extraordinary display, the best that has been shown from this establishment during the present spring. Ten large boxes, containing a dozen blooms each, were required; and there were three groups of Roses, with long stems, staked in bottles, and interspersed with the boxes, which relieved the monotony of these. A considerable number of varieties of Teas and Perpetuals were included (Silver-gilt Flora Medal).

A grand display of *Marchal Niel* Roses was made by Mr. J. WALKER, Thame, Oxon, who had about five dozen excellent specimens (Silver Flora Medal).

MESSRS. W. PLATT & SONS, Waltham Cross Nurseries, Herts, were splendidly represented by a group of Rose trees in pots staged upon the floor of the hall near the entrance-door. All of the plants were fresh-looking and healthy, and many of them carried exceptionally large blooms. The following as Standards, were very noteworthy, *Madame Camille*, *Madame de France* (specially pretty pale yellow blossom), Duke of Edinburgh, and Duke of York. Of dwarfier bush lants there were *Jeanne Dickson*, Duke of Edinburgh, and many other varieties. Some cut blooms of the variety *Marchal Niel* were of exceptional size and quality (Silver-gilt Flora Medal).

MESSRS. W. CUTBUSH & SON, Highgate and Barnet Nurseries, staged a group of herbaceous and other plants, for which a Bronze Banksian Medal was awarded.

From Messrs. PAUL & SON, Chestnut, were contributed first-class specimens of the following plants:—*Sambucus plumosa aurea*, *Andromeda japonica variegata*, *Trollius grandiflorus*, *Trollius europaeus*, *Geum martianum*, *Phlox canadensis*, *Rhododendron Fortunei* var. Mrs. Chas. Butler, R. Cassingham ochroleucum, several species of *Prunus* and *Rosa*, *Asplenium adnigrum*, *Asplenium M. Fitchii*, *Asplenium Morgan*, similar to the previous one, but red in colour. A good batch was included of the pretty little *Iris cristata*; it grows about 4 inches high, and has pale blue flowers suitable for planting upon rockwork (Silver Flora Medal).

An Award of Merit was recommended to Messrs. BARK & SON, King Street, Covent Garden, for *Trollius parviflorus*. This is a very tall-growing *Trollius*, with deeper-coloured flowers than *T. europaeus*.

Messrs. JNO. WATERER & SONS, Ltd., Bagshot Nurseries, Surrey, exhibited a magnificent *Rhododendron* named King Pearl. The trusses of flower were large, and the blossoms about 4 inches across, and of very bright, rosy-pink in colour, the upper petal moderately marked with brown. Leaves were very large, but stout. The flower-buds before opening are very deep in colour (Award of Merit).

R. L. MEASURES, Esq., Ladynead (gr. Mr. W. Wootton), exhibited a bloom of *Phyllocactus speciosus*.

Messrs. KELWAY & SON, Langport, Somerset, showed a collection of blooms of *Tropea* in variety, and was awarded a Silver Flora Medal.

A First-class Certificate was awarded to a handsome Fern—*Anemia rotundifolia*—shown by Mr. W. BELL, New and Rare Plant Establishment, King's Road, Chelsea. The species of *Anemia* produce a branched panicle (superficially similar to those on the Aspidia), containing the essential organs, being therefore absolutely independent of the foliaceous fronds. The species exhibited had about twenty irregular, angular pinnae, of round shape, upon each frond, and the midrib of the frond beyond was barren, as is common to the genus. It is a handsome dwarf-growing Fern, of light, rather spreading appearance, and the young fronds are beautiful.

The plants from the Royal Gardens, Ken, were remarkable for their floriferous character, consisting as they did of *Rhododendrons*, *Pyrus*, &c. The *Rhododendrons* were R. *keownii* = R. *Hoekeri* × *Griffithianum*, with large rosy flowers, set in the terminal branches; R. *Andromeda*, from Yunnan, with flesh-colored segments, with a small patch of crimson spots on the upper segment, five or six flowers on a corymb, and furnished with small smooth leaves; R. *Smirnovii*, rosy-purple and large-flowered, with leaves downy on the under side; R. *Vasyi*, light coloured small flowers, numerous, set in almost leafless branches; R. *keownii*, with white blooms slightly flushed and tinted with rose; R. *cinabarinum*, from Sikkin, tubular, scarlet-and-yellow, campanulate flowers in bunches; R. *Lacombei* = *Fortunei* × *Thomsoni*, flowers bright crimson, and large in size. Another form of R. *cinabarinum* had flowers of one hue, crimson, and much more expanded, reminding one of a *Lagerflora*. *Prunus Schiedekeri*, P. *Ringo*, *Amelanchier alnifolia*, very pretty; *Ribes speciosum* (R. *Fuchsoides*), *Spiraea media*, *Cytisus purgans*, &c., were likewise shown.

Tulips formed a considerable part of the subjects staged at this meeting. The collection of Messrs. BARK & SON, King Street, Covent Garden, could be seen various forms of the florists' Tulips in their breeders and broken form. Breeders were represented by Sulphur and Gold-finder, bizarres; Philip I, byblenken; Kate Connor and Modesty, roses—the former being the most beautiful of the unbroken flowers; of rectified varieties they had of bizarres, Dr. Hardy and Sir Joseph Paxton, varieties which have held their own for nearly half a century past, and it is very probable will remain unbroken in the next fifty years. James Wild, Colport, almost destitute of any feathering; Criterion, George Hayward, and Lord Edford, byblenken were represented by Mrs. Jackson, both feathered and flamed; roses by Industry and Annie McGregor. Of the so-called Darwin breeders, nearly every one of which has the black base peculiar to *T. gesneriana*; Flambeau, deep red; Hecla, dark bronzy-crimson; Glow, deep crimson; Lovelace, deep red; and several others. A few of the flame fans of slaty-purple; White Queen, cream and yellow tinted with rose, very attractive; Chestnut, very dark, the shining dark Maroon, almost black; and Bronze King, golden-bronze.

Then, of what are termed cottage Tulips—varieties of varying marking, may be mentioned, also-culata, reddish-rose with a white base; Golden Beauty, also known as Bouton d'Or; Goldflake, flaked with gold on an orange-scarlet ground; Gesneriana spatulata, crimson-scarlet; macrospila, deep scarlet, &c. Blue King and Marriage de la Belle represented the late noble varieties, and the gorgeous Parrot types were seen in the Large Yellow, Crimson Beauty, and Perfection (Silver Flora Medal).

Messrs. JAMES VEITCH & SONS had a large bank of flowers, including many forms of the Tulip. Species were represented by Cornuta, Fulgore, Florentina, Elegans, alba retroflexa, Didieri, and Viduus. A very well selected set of the Rose of Sharon were seen in the Large Yellow, Crimson Beauty, and Perfection (Silver Flora Medal).

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Parrot varieties were included in this collection, such as Mark Grant, luteo major, Profecto, and Café Brno, in all of which yellow and orange predominated; Admiral of Constantinople and Cramoisie Brillante represented the scarlet and crimson varieties (Silver Banksian Medal).

Messrs. KREAGE & CO., Haarlem, had White Lady, yellow lady and a slight yellow flame on white; and Elegant Lady, white, striped with crimson.

Mr. B. LADYMAN, nurseryman, Shirley, Southampton, had Flava, a large pale yellow form.

Orchid Committee.

Present: Harry J. Veitch, Esq., in the Chair; and Messrs. Jas. O'Brien (Hon. Sec.), E. Hill, Dr. B. Crawshaw, H. M. Pollett, J. Gabriel, W. H. Young, F. J. Thorne, H. J. Chapman, T. W. Bond, C. Pilcher, W. Cobb, J. Douglas, and H. Williams.

Messrs. Jas. Veitch & Sons, Ltd., Royal Exotic Nursery, King's Road, Chelsea, staged a superb group which secured for them a Silver-gilt Flora Medal, an honour seldom accorded to exhibitors. Among the most prominent in the group, which consisted of uniformly finely-grown and well-flowered specimens, were several plants of their fine hybrid *Laelia* × *Lestonia* (*cinabarina* ♀, *purpurata* ♂) which have markedly improved since we last saw the plants. The flowers were from clear lemon-yellow, slightly tinged with rose, with rich purple from lobe to the lip, to yellow tinged with reddish-purple, all the varieties being alike attractive. The same term may be applied to the kindred *Laelio-Cattleya* × *Hippolyta* raised by them, the prevailing colours of which are Indian red; the plant was also well shown *Laelia-Cattleya* × *Ascania* (C. *Trianae* ♀, L. *santhiana* ♂), and *Cattleya* × *Philo* (*Mossie* ♀, *unicolor* ♂) were likewise shown. The group contained almost lots of the handsome *Dista* × *Veitchii*, *Dendrobium Phalaenopsis Schroderianum*, *Cattleya Mendeli*, and other *Cattleya*s; some fine *Ondoglossum*, *Oncidium sarcodeum*, O. *Marshallianum*, and O. *concolor*; *Corymbopetalum Massianum*, *Cypripedium*, &c.

Messrs. HIGGS LOW & CO. Clapton, received a Silver Flora Medal for an excellent group in which were a grand white *Cattleya Gaskelliana* alba, perhaps the largest white-flowered form of *C. latina*; some very fine C. *Mendeli*, of which C. M. *majestica* and C. M. *fabriata* were remarkably good; *Cattleya* × *Philo* *Schroderiana*, *Laelia purpurata* in splendid forms, *Coleogyne pandurata*, fine pandura of *Dendrobium Bensoniae*, and other *Dendrobium*s and *Ondoglossum*s, of which O. *Andersonianum* splendens was a grand form very richly coloured, *Cypripedium*s, &c.

Messrs. S. WILLIAMS & SON, Upper Holloway, staged an effective group, in which *Cattleya Mendeli* was well represented, those named "aura" and "amona" being specially distinct; in the group were also many good C. *Schroderae*, C. *Skinneri*, *Laelia purpurata* in fine examples; *Xanthopus Leonis*, *Ada aurantiaca*, *Cypripedium* × *Calantheum*, C. × *Hibiscanthum superbum*, C. *oxyl*, C. *Chamberlainiana*, C. × *Grande*, C. *Boeckii*, C. *Materianaum*, C. *venustum*, a number of *Calanthe Sanderiana*, some good plants of *Dendrobium Devonianum*, and D. *thyrasiforme*, and a single plant of the yellow-tinted D. *Hollausianum luteum*; *Miltonia spectabilis*, *Oncidium concolor*, and a good selection of *Ondoglossum* (Silver Flora Medal).

A. H. SMER, Esq., The Grange, Wallington (gr. Mr. Cummins), had a fine group of the showy *Cattleya*s, for which his collection is noted, most of which were beyond the average in point of beauty, that form of C. *Mendeli* named "Her Majesty," being a grand flower, with a rich carmine-crimson coloured lip. Mr. Smer's group contained besides these, the singular-looking *Bulbophyllum sacroculanthum*, bearing three spikes of its remarkable flower; *Cirriopetalum elegantulum* (Botanical Cert. feat), *Oncidium uicorne*, and other pretty and singular species. For the group a Silver Flora Medal was awarded.

WALTER C. WALKER, Esq., Perry Lodge, Winchmore Hill (gr. Mr. George Craig), was also awarded a Silver Flora Medal for a very bright and fresh-looking group of *Cattleya Mendeli*, C. *intermedia*, and other *Cattleya*s; *Laelia purpurata*, L. *grandis*, and L. *Boothiana*; fine forms of *Oncidium Marshallianum*, O. *concolor*, and O. *varicosum* *Rogersii*; some good *Ondoglossum*s, among which O. *crispum* *Kuhnii* were the seeds bearing one or two distinct brown blotches.

Messrs. CARPIS & SON, Tunbridge Wells, received a Silver Banksian Medal for a small group in which were two splendidly flowered specimens of *Cypripedium caudatum*; and one C. C. *Wallisi* and one C. *philippense*.

W. H. YOUNG, Esq., 10, Grosvenor Gardens, (gr. Mr. S. Cooke), showed *Ondoglossum Andersonianum* *Bogardianum*, one of the largest and best forms yet seen. The large yellowish-white flowers were heavily blotched with dark red (Award of Merit).

Sir FREDERICK WIGAN, Clare Lawn, East Sheen (gr. Mr. W. H. Young), showed *Laelia purpurata* "Ethel Grey," a very handsome flower, with white sepals and petals, and white base to the lip, closely lined on the inside with purple, the front lobe being of a peculiar bright claret colour, changing to lilac towards the margin.

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Cypripedium × *bellatulo-venularium*, with handsome white flower tinged with rose, and densely spotted with purple—in a great degree resembling C. *Leptanimum* (Award of Merit). Mrs. Briggs Bury also showed a form of O. *Andersonianum*, and a trilobed *Dendrobium Wardianum*.

THOS. STATER, Esq., Stand Hall, Whitefield, Manchester (gr. Mr. F. Johnson), sent *Laelia purpurata alba magnifica*, a large white form, with rich purple tinge to the broadly-expanded lip.

J. FORSTER ALCOCK, Esq., Egham, Northchurch, Herts, showed a fine *Cattleya Schilleriana*, and *Cypripedium viridescens* (C.) with greenish-yellow flowers spotted with brown.

Mr. J. MITCHELL, Bexley Heath, showed a large-flowered *Cattleya Mendeli*.

Franz Ida BRANDY, Brunnenhof, Riesbach, Zurich (gr. Mr. Schlecht), sent the rare and singular *Oncidium Warneri*, with purple-tinted petals, and bright yellow lip (Botanical Certificate); also a splendid variety of *Vanda lamellata* *Boxallii*, and *Houlletia Lamsheii*, a very nearly ally of H. *trigyna*. The Marquis CAMBES, Bayahat, Abbey, Kent (gr. Mr. A. Methven), exhibited *Cattleya Mendeli* with seven flowers on one spike.

R. BROOMAN-WHITE, Esq., Arddaroch, Garioch, sent *Ondoglossum Andersonianum pulcherrimum*, a rose-tinted, purple-blotched variety; O. *caudatum*, previously certified for; and two *Cypripedium*s.

C. L. N. ISOBRA, Esq., Elstead House, Godalming (gr. Mr. T. W. Bond), showed *Cattleya* × *Rajah* (*Trianae* × *Worcesteri*), and *Laelio-Cattleya* × *Sir Wm. Ingram*.

R. L. MEASURES, Esq., Ladynead, Rogate, Sussex (gr. Mr. Wootton), showed his new *Cypripedium* × *Chapanui magnificum* (*bellatulo* × *Curtilii*), a superb large flower, with broad white petals, densely spotted with purple; massive upper sepal white, tinged with green in the centre, and with numerous dotted purple lines; and fine purple labellum—the darkest in colour, and best of its section (Award of Merit).

Messrs. F. SANDER & CO., St. Albans, arranged an effective group of *Cattleya*s, *Dendrobium*s, &c., the chief attraction in which was the massive *Cypripedium* × *Oakes Aimes* (*Rothschildianum* × *ciliolare*), which gained a Gold Medal at Hamburg. The flowers resembled C. × *Mansionium*, but were more robust, and especially the lip. Messrs. Sander also showed *Massevallia Chesteronii*, *M. bella*, M. *Chimera*, M. *Benedicti*, *Bulbophyllum Lobbiai*, *Maxillaria Sanderiana*, *Miltonia vexillaria Clonicensis*, &c.

H. J. HARRIS, Esq., Bowden Hill House, Chippenham (gr. Mr. Jas. Penton), sent *Ondoglossum Pescatorei*. ANNEOLA S. COOKE, Esq., Kingston Hill (gr. Mr. Buckell), showed a fine specimen of *Massevallia Hartmanni*.

E. BOSTOCK, Esq., Tixdale Lodge, Staffordshire, showed ten varieties of *Laelia purpurata*, and several *Cattleya Schroderae*.

Fruit and Vegetable Committee.

Present: Philip Crowley, Esq., Chairman; and Messrs. F. R. Rivers, J. Cheal, Geo. Bunyard, J. H. Veitch, A. F. Barron, A. H. Pearson, W. J. Empson, A. Dean, Jno. A. Laing, W. Bates, W. Farr, G. H. Sage, Geo. Wythes, Jas. Smith, H. Balderson, Geo. T. Miles, F. Q. Lue, G. W. Cummins, Geo. Reynolds, G. Norman, J. Willard, and R. Wyfe.

Mrs. WINGFIELD, Amptill House, Beds (gr. Mr. Empson), showed a nice collection of vegetables, including several varieties of Peas as grown in pots, and especially the lip. The former were Carter's Lightning, a very early sower, and Carter's Forcing, somewhat later, but with more and better pods; Radishes in several varieties were very tempting; Potatoes, in two varieties; Cucumbers, also two, and both excellent, viz., Rochester Market and Blenheim; some capsicums; Broccoli, Lettuces, Leeks, Earliest of All Tomatoes, a small but heavy-cropping variety (Knight's Silver Medal).

Earl PRECY, Syon House (gr. Mr. G. Wythes), showed eight fruits of Halls' Early Peach, well coloured; and a large number of ripe fruits of St. John and Brown Turkey Figs.

Mr. RUSSELL, Hatfield, Metchley Farm, showed a Strawberry named Early Giant, nine fruits of which have weighed 1½ oz. each, and some have been gathered weighing more than 3 oz. each. The fruits of the first picking are much grooved, and the later ones less so, and almost of a conical shape; it is a fine looking fruit.

Apple Competition.—The 1st prize went to Mr. J. C. TALLOTT, Bury St. Edmunds, for Cortina Pendu Plat; and the 2nd to F. C. CARB GOMM, Esq., Farnham Chase (gr. Mr. A. J. Reed), for the small-fruited Pine Golden Pippin. The competitors in this class were naturally very few.

The Lecture.

The well-known mycologist, Mr. GEO. MASSEE of Key, invited his hearers into the mysteries pertaining to the life history of certain minute fungi, causing diseases in plants, particularly of a few specimens that were taken as types. Each of these was illustrated by means of lantern slides, which helped greatly to render the lecture more easy a grasp.

The great fact that was insisted upon by Mr. Massee, and which has been reiterated in the *Gardener's Chronicle*, was the importance of preventive measures, compared with which attempts to cure plants already attacked are absolutely worthless. When a fungoid disease is discovered upon the epidermis of a plant, the mycelium has, in many cases, already spread underneath, and has



THE

Gardeners' Chronicle.

SATURDAY, MAY 22, 1897.

THE BIBLIOGRAPHY OF THE DAHLIA.

THE short notice of "The Dahlia by Various Writers," which appears on p. 221 of the *Gardeners' Chronicle*, is a reminder of a long period of literary neglect, that a somewhat gorgeous and once highly-popular flower has had to undergo. There have, of course, been numerous articles in the horticultural press on Dahlia history and cultivation by writers specially interested in those subjects for many years past, but unless I am much mistaken no independent treatise worthy of the name has been written for a period of something like forty years. Before taking a brief survey of the bibliography of the Dahlia, it may be useful to mention that in addition to the Dahlia Conference held by the Royal Horticultural Society, there was also one held in 1889 at the Crystal Palace, under the auspices of the National Dahl Society, primarily for the purpose of celebrating the centenary of the introduction of that flower into Europe, and the papers which were then read appeared in the Society's Report for the following year.

Having for some years past devoted a portion of my leisure to the collecting of books on florists' flowers, I have picked up from various sources a number of cultural and other treatises dealing with the Dahlia. I believe the collection to be complete, but it is possible that there may be some small insignificant works of merely local repute wanting. Many little paper-covered pamphlets on various florists' flowers have from time to time been issued, but owing to the flimsy form in which their authors have produced them, they have had but an ephemeral existence, and consequently are most difficult to obtain.

In the early part of the present century the Dahlia as a show flower occupied a position analogous to that enjoyed to-day by the Chrysanthemum, and similarly many of the novelties were of continental origin. So therefore the majority of the books, but particularly the earliest, were written by French authors.

It is beyond the scope of this article to refer at length to the contributions of such writers as those who wrote in the Journals and Transactions of the various horticultural and botanical societies at home and abroad when the Dahlia was first introduced. Cavanilles, Thoun, Willdenow, Sabine, de Candolle, Wedgwood, and others, have all in some way or other described the flower from a botanical or horticultural standpoint in such works as are alluded to.

The first independent treatise was that entitled *Essai sur la Culture, la Nomenclature, et la Classification des Dahlias*, by Messrs. Jacquin frères, of Paris, and was published in 1828. Two years later a second edition in a much enlarged form appeared, and besides giving between fifty and sixty pages of cultural direc-

tions, the authors supplied a descriptive catalogue of the varieties then known, classed according to their colour. This list, arranged in eleven main divisions, contains the names of 289 varieties, followed by a supplemental list of another 164 varieties, which bear no descriptions, as they had not been tested by the authors. As an example of the somewhat methodical way in which the varieties were classified, we see that Division I. comprises only white Dahlias. Then this division is sub-divided into sections:—1, Being for pure white; 2, for ivory-white; 3, for lilac-white; and 4, for rosy-white. Divisions II. to XI. are devoted to various other colours, viz., rose, lilac, violet, purple, amaranth, crimson, red (12 sections), yellow, &c., showing that very great diversity of colour existed even in those far off times.

The next book was from the pen of Comte Lelieur, whose name is frequently mentioned by English Dahlia writers as a prominent cultivator. This gentleman was Director of the Parks and Gardens of the King of France, and a corresponding member of the London Horticultural Society. His book was published in 1829, under the title of *Mémoire sur le Dahlia et sur sa Culture*. The Comte reviews much of the literary matter that had previously appeared in other works, both English and foreign, and deals liberally with the details of cultivation, without, however, adopting the very common practice of swelling the size of his volume with a long list of varieties at the end.

Most lovers of the Dahlia have either seen or heard of the *Annual Dahlia Register*, with its inordinately lengthy title and numerous coloured illustrations, of which there are about fifty in all. This was published in 1836 in London, and was no doubt regarded at the time as an *édition de luxe*. The intention was to make it an annual publication, but the price at which it was issued—£1 10s.—seems to have been prohibitive, notwithstanding the enthusiasm of the growers, and it never got beyond the first volume. The literary matter consists chiefly of dealers' catalogues, show reports, and a few odd articles on various subjects connected with the flower. The book, however, will long remain of value to the student of Dahlia literature, and the plates have an historic interest for those who are concerned with the evolution of their favourite. The style and get-up of the annual *Dahlia Register* certainly speaks much for the enthusiasm and hopefulness of its compiler, who is described as an amateur.

In 1838 Sir Joseph Paxton published a handy little cloth-covered book called *A Practical Treatise on the Cultivation of the Dahlia*, and this was in the following year translated into French, and issued under the title of *Traité pratique de la Culture du Dahlia*. The next book was also French, and came out about 1840 in the *Bibliothèque du Jardinier*. It was written by Pirolle, and its title was simply *Dahlia*. The same work, identical in every respect save the cover, appears to have been published by Pirolle, in 1840, under the title, *Traité Spécial et Didactique du Dahlia*, and then in 1841 Pirolle again appears on the scene with one called *Recue des Dahlias en 1840, ou Supplément au Traité des Dahlias*.

In 1843 yet another book, similar in form and size to the three preceding, and, like them, published in Paris, was written by Augustin Legendre. This was called, *Le Dahlia: Histoire et Culture détaillée*, and of this a second edition, bearing the title, *Manuel du Cultivateur de Dahlias*, revised and corrected by Pepin, was

published in 1848. It is rather curious to note that while in the earliest French books the varieties mentioned in the descriptive lists were mainly of continental origin, those enumerated in the later ones contained a large percentage of varieties bearing undoubted English appellations, and these often accompanied by the raiser's names.

Probably none of the Dahlias then grown are known to modern cultivators, but it may be interesting to mention that in the last-named work, that by M. Pepin, the English raisers represented were Keynes, Brown, Drummond, Harrison, Girling, Kimberley, Proctor, Salter, Heale, Mitchell, Turner, and several more; and in addition to these there are names of others given which show that Dahlias were then being raised by German growers.

In *Tyass's Popular Flowers*, one of the series was devoted to the flower under notice, but it was only a small sixpenny pamphlet of a few pages, and its scope was rather restricted; its date of issue was 1841. In another series of gardening books called the gardeners' monthly volume, there appeared, in 1847, a volume entitled *The Dahlia, its Culture, Uses, and History*, by George W. Johnson and G. Turner; and from it I learn that Mr. Turner gave to the public in the preceding year his *Practical Observations on the Culture of the Dahlia*. Whether these observations were issued in a separate form, or appeared in some other horticultural publication, it does not say; nor do I know, for although no effort or expense has been spared to trace the "observations," the result has been far from satisfactory, and the only information gained is, that it is believed they formed the preface to Mr. Turner's trade catalogue of Dahlias for that year. In the treatise devoted to the Dahlia which appeared as one of the gardeners' monthly volumes, a brief sketch of the literature of the flower is given, beginning with Cavanilles' article, and M. Thoun's memoir in the *Annales du Muséum d'Histoire Naturelle* (1804), which is also in my collection, and in which a coloured plate is given of three varieties then known. They are all singles, the double form being then no doubt non-existent. Other references are also made to various contributions that appeared in the *Horticultural Transactions*, the *Gardeners' Dictionary*, and different botanical publications, but curiously enough there is not a single reference to any of the French publications to which attention has been called by me in the earlier part of this paper.

The late Dr. Hogg, in 1853, published *The Dahlia: its History and Cultivation, with Descriptions of all the best Show-flowers*. From a literary and artistic point of view, this book unquestionably ranks next in importance to the *Annual Dahlia Register*, for it is of the same size, although less bulky, and it contains eight large coloured illustrations, and is a well-printed, historical, and cultural hand-book, that no doubt was regarded as a standard work in its day.

Mr. Shirley Hibberd, who contributed much information of a valuable nature on the occasion of the two Dahlia Conferences held in 1889 and 1890 respectively, was the author of a little pamphlet, with a coloured frontispiece, in 1857. It was one of his series of "Garden Favourites;" and then occurs a great blank in the independent bibliography of our subject, which extends over four decades.

American gardening literature reveals little or nothing in the shape of Dahlia literature in

separate form, except a pamphlet published last autumn by Lawrence K. Peacock, the Secretary of the recently-formed American Dahlia Society; and a pamphlet issued early in the present year, being Bulletin 128 of the Cornell University, Horticultural Division, entitled "A Talk about Dahlias, by Wilhelm Miller," which is accompanied by a sixteen-page Inventory of the single, pompon, large-flowering, and cactus varieties grown at the Cornell Experiment Station during the past year. These, and the publication of *The Dahlia by Various Writers*, seem to point to a revival of literary interest in the flower, and cannot fail to be productive of beneficial results. C. Harman Payne.

NEW OR NOTEWORTHY PLANTS.

BOLBOPHYLLUM PFILOGLOSSUM, *Wendland and Kränzin (Barbigeres)**

THIS curious *Bolbophyllum* was discovered by the late Johannes Braun. His last collection reached Europe in tolerably good condition, and was purchased by Mr. Herman Wendland, who flowered the plant for the first time in 1896, at Herrenhausen, near Hanover. I am indebted to him for fine materials, i.e., a splendid raceme, and a sketch of the plant. About the affinity, it is clear at the first glance that it belongs undoubtedly to the little group of this genus, of which *Bolbophyllum barbigerum*, Lindl., is the first; and *B. calamarium*, I believe, the best known representative. It is, however, easy to distinguish it from those species and others of the same affinity, by the want of horns on both sides of the anther, by the well-developed side-lobes of the lip, and by the long purplish hairs covering the whole margin from the very base to the top. In the other species, the hairiness is confined to the anterior part, or at least a smaller area of the lip, and in all the other species side-lobes are totally wanting. The flowers are smaller than those of *B. calamarium*, and of green colour, spotted with purple; they are somewhat larger than those of *Bolbophyllum saltatorum*, Lindl. Mr. Wendland, who has seen the flowers opening, says that the irritability and the movements of the lip are quite the same as in the *Megacaliniums*, or Frog Orchids, and that they make the same striking impression on the beholder. F. Kränzin.

CULTURAL MEMORANDA.

LILACS.

WHERE a large number of Lilacs is forced annually it is best to have two batches of plants, each batch being sufficient in number for one year's requirements. The plants need then only be forced every alternate year, which to a great extent will reduce the amount of labour necessary to prepare them. In cases where there is but one batch, the plants require early attention, and should be cut back to three or four buds on the previous year's wood, after which they may be placed near the glass in a temperature

* *Bolbophyllum pfioglossum*, Wendland et Kränzin (*Barb. g. var.*).—Caulis primario longe proterente 1-2 mm. diam., caulibus secundariis (bulbis) cataphyllis quinquies ovatis basi involutis, subtetragonis, ovoidis obtusis 2 cm. altis, 1.5 cm. crassis, monophyllis; folio o basi contracta linearis-filigato obtuso bilobato ad 10 cm. longo ad 2 cm. lato; racemo folia excedente tenui ad 25 cm. alto subsistente; squamis arete adpressis vestito rufino; bracteis paleaceis triangulis quam ovaria duplo longioribus acutis; sepalis triangulis acutis, lateralibus in antherium fore rectangulum harkatis; gynoestio crasso perbrevis, demum utriusque callo oblongatis. Sepala 6 mm. longa, labellum paulo longius, ovarium crassiusculum turbinatum obtidum.

Madagascar, leg. Joh. Braun vir beatiss.

of 50°, where they may be thoroughly syringed occasionally. The plants will start away freely from the base, and if requisite they may be repotted into pots of a slightly larger size. Grow them sturdily, avoiding all means a high temperature and weak spindly growth. When they have made sufficient growth, gradually harden the plants, and finally plunge the pots up to the rim in a sunny position.

If there are two lots, good results are more certain, and the plants after flowering need only be hard pruned, and planted out on a well-prepared border, making the soil about the roots firm, which will induce a solid growth, which, if not strong the first year, will, by due attention to pruning, &c., be succeeded the following season by strong wood in a good state for flowering. Thus, if there are two good batches, the plants will need attention less early, and house room is not required; besides which, the plants are more certain to give satisfaction.

AZALEA INDICA.

AS soon as these plants have done flowering, give the foliage a thorough syringing with a solution of Gishurst Compound, to destroy any thrips, &c. The operation should be done in the open, so that no thrips be dislodged from the plants into the house. If convenient, the plants may be fumigated, but even then it is good practice to thoroughly wash the plants with some insecticide. The seed-pods should be removed, and the plants stood in a warm structure to encourage an early free growth. Repeat any that require more root-space as soon as new growth commences, using sweet fibrous peat and sharp grit. The fresh pots should be clean and well drained, and the roots in a moderately damp condition. Disentangle the outside roots with a pointed stick, and pot very firmly, taking great care to work the soil around the roots, and do not over-pot at one time. H. Markham.

ORCHID NOTES AND GLEANINGS.

CATTLEYA SCHRÖDERÆ.

SEVERAL varieties of this delicately-tinted and fragrant *Cattleya* come from the collection of Joseph Broome, Esq., Sunny Hill, Llandudno, who certainly gets magnificent flowers on most of the species he cultivates. Most of the flowers are of the charming Peach-blossom tint peculiar to the species, but one is pure white with a bright yellow tinge on the lip, and another is white and closely veined with light purple, the labellum having a clear orange disc. In addition to its great beauty, C. Schröderæ, which is not plentiful, has the merit of completing the chain of varieties of C. labiata, and continuing the display of them the greater part of the year.

Two very distinct varieties of *Lalio-Cattleya* × *Schilleriana*, the one with a peculiar white tinge to the lip, and the other with a richly-coloured front lobe, accompany the *Cattleyas*.

ORCHIDS AT THE GRANGE, WILMSLOW.

Science and experimenting go hand in hand, and although some experiments result in failure, a sufficient number to encourage the experimenters brings success, and in any case some amount of experience is gained. Thus in the gardens of such an enthusiast as Dr. Hodgkinson, who is fond of plants difficult to grow, and who is continually endeavouring to find out their requirements, it is not surprising to come upon a large number of species which many persons grow but indifferently, among the most thriving and floriferous in the care of Mr. Moore, the gardener there. Among these may be mentioned a number of *Lælia majalis*, which produce a fine show of their large, handsome flowers annually; umbers of *Cattleya citrina*, finely in bloom; *Eulophelia Elisabethæ*, with a fine spike, and which here grows and blooms well and regularly; *Cattleya Rex* and C. *Schilleriana*, in splendid forms; and *Comarsetia macropecton*, and a number of other kindred species, usually considered fragile, here thriving and flowering well.

In the cool-houses a pretty display was remarked of *Odontoglossum Masdevallianum*, and *Sophranitis*, one

magnificent variety of *S. grandiflora* bearing seven noble flowers; and other interesting species. Specially good were the forms of *Odontoglossum Cervantesii*, including the rose-tinted O. C. *Ilacium*, O. *Rosei majus*, and the varieties of O. *Crispum*, of which one handsome variety had the sepals furnished with very reddish-brown blotches, and resembling O. C. *Triana*.

In the intermediate-houses a good show was made with *Cattleya Schröderæ*, C. *Mendeli*, *Lælia purpurata*, and other species; good plants of *Cattleya aurea*, a fine lot of strong specimens of *Odontoglossum citrosium* about to flower well; *Miltonia cuneata*, M. *Rozellii* and its white variety; many kinds of *Dendrobium*, *Arundina bambusaefolia*, *Lælia cinnabarina*, and the chrome-yellow-flowered *L. flava*, together with *L. cinnabarina aurantiaca*, which seems intermediate between the two named; some species of *Vandas*, including the one known as *V. gigantea* (*Stauropsis gigantea*), and a number of species and hybrids of *Cypripedium*.

In all the houses interesting species, other than Orchids, are grown. In the cool-house were *Darlingtonia californica*, and other singular plants; and in the warm ones, *Anthuriums* and other stove plants not likely to harbour insects—and in many ways the gardens and houses are made specially interesting.

ODONTOGLOSSUM CRISPUM.

When viewing the fine flatly-ridged forms of this species, which are now regarded as "the best type," the question is often asked—But why crispum? for it is seldom that a variety which would suggest that name appears. A noble specimen, to which the term may be applied in its broadest sense, is sent by Capt. Holford, Westonbirt House, Tetbury, Gloucestershire (gr. Mr. Chapman). The flowers are large, the segments broad, and both sepals and petals are most beautifully crisped, curled and fringed, and yet in such a manner as to add to the artistic beauty of the whole inflorescence. The sepals are banded with bright purple on the reverse side, the tint appearing also in a lesser degree in the front. Each sepal has in the inner half a cluster of brown blotches. The petals are pure white, very much cut and fringed. The labellum has a bright yellow base, surrounded by a number of cinnamon-brown spots, and a white, crimped, and fringed margin.

PROGRESS OF THE CYCLAMEN.*

(Continued from p. 318.)

Colour.—There is evidence that seminal variation as regards colours occurred at least as early as 1829, but the modern forms with large coloured flowers, according to Mr. Martin, originated in a different way, and can be traced back to the old *crisatum* and white. That preserves the crimson ring round the throat, but is otherwise an albino. There is nothing remarkable in this. Any species in nature may produce white flowers; albinism is in effect the commonest of all variations. "Giant White" is a pure albino, in which the crimson ring has been suppressed.

The modern coloured forms were obtained in the first instance by selecting forms in which the coloured ring showed a disposition to spread into the white corolla segments. The first indication would be a scarcely perceptible streak. By selection from self-fertilised plants the streak was widened into a stripe. Continuing the process, the stripes united, and a uniformly coloured flower was obtained.

The more striking colours, such as that of "Vulcan," which is a dark crimson, were, however, obtained not by progressive selection, but amongst the progeny of cross-fertilised plants.

I learn from Messrs. Hugh Low & Co. that coloured varieties, of course when self-fertilised, come true from seed. This is in accordance with a well-known principle.†

The Butterfly Form.—This has been obtained in

* "The cultural evolution of *Cyclamen latifolium*, *Silbberg.*" By W. T. Threlton Dyer, C.M.G., C.I.E., F.R.S. Read March 18, 1897, before the Royal Society.

† Darwin, *Cross and Self-fertilisation*, p. 460.

dependently by several horticulturists. The segments are partially spreading, and concave on their inner surface. One of the most remarkable is that raised by M. de Langhe-Vervaeue; it is represented in fig. 113. He informs me that "these are the products of the eleventh year of improvement." He adds: "I never crossed them with any other strain; I do not like crossing races. I prefer improving them." He has kindly favoured me with the following detailed account of the mode in which the strain has been developed and improved. I quote it in his own words:—[See also *Gardeners' Chronicle*, 1897, p. 71, fig. 10.]

"Les Cyclamen Papilio que j'ai obtenus sont issus directement des Cyclamen persicum, var. giganteum. "Il y a environ une douzaine d'années je remarquai parmi mes semis de Cyclamen une plante qui attirait mon attention par l'extrême beauté de son feuillage dentelé et marbré. En examinant la plante, je vis qu'elle portait une grande quantité de boutons; ceux-ci étaient de forme plus arrondie et plus courte que ne lo sont généralement ceux des Cyclamen persicum. La plante fut mise aux; quand elle commença à fleurir, elle m'étonna par la forme bizarre de ses fleurs. Ces diverses circonstances m'engagèrent à en recueillir les graines.

In this case the basis of the new strain was found in a marked variation or "sport." The deviation from the type could not, however, have been very marked. The most remarkable feature in "Papilio" as now developed is the curled and toothed margin of the corolla segments. These peculiarities repeat characters which occur elsewhere in the order. In *Soldanella* the toothings is conspicuous; curling occurs in cultivated varieties of *Primula sinensis*. It is interesting to observe in "Papilio" that in the primary variation there was a correlation between the toothings of the corolla segments and of the leaves.

Cresting.—The most remarkable form which has made its appearance under cultivation is that in which a plumose crest has developed on the inner surface of each corolla segment. This is shown in fig. 114, which represents the "Bush Hill Pioneer," raised by Messrs. Hugh Low & Co. I quote the account of its development with which they have been so good as to furnish me:—

"This interesting variety was first observed in our nurseries some four years since, but how it originated we are unable to say.

"At that time, the only peculiarity about the variety was a very slightly raised rib running part of the way up the petals, and showing no tendency to

afterwards to have been lost sight of.* It has also occurred in a red-flowered form in France,† in which case it was also perpetuated by seed.

I have not succeeded in discovering any similar structure in any primulaceous structure occurring in a wild state. Dr. Masters, however, informs me that it has been observed in cultivated forms of *Primula sinensis*. The tendency thus seems to be latent in the order, though why it should be so I am unable to explain.

Some theoretical interest appears to me to attach to the rapid development of so striking an ornament of a corolla segment. Such appendages are frequent enough in Orchids, and are regarded as adaptations to cross-fertilisation by insects. Their gradual evolution might be thought to require a long period of time, but in the present case we have definite evidence that such a structure may be developed by selection with great rapidity.

Conclusion.—I. The facts which I have stated appear to me to establish the result that when once specific stability‡ has been broken down in a plant, morphological changes of great variety and magnitude can be brought about in a comparatively short space of time. This appears to me to have a very important bearing on the rate of evolution. Mr. Darwin



FIG. 112.—FLOWER OF SPREADING CYCLAMEN.
See p. 317, ante. (Reduced one-half.)



FIG. 113.—FLOWER OF BUTTERFLY CYCLAMEN.

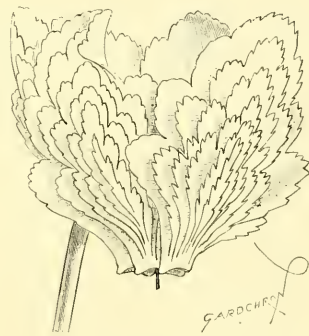


FIG. 114.—CRESTED CYCLAMEN.

"L'année suivante j'obtins quelques jeunes plantes. Au moment de leur floraison, elles purent être comparées à la plante mère.

"Les plus parfaites de ces plantes furent choisies pour servir de porte-graines, et leurs fleurs furent fécondées entre elles. L'année suivante je fus assez heureux pour constater un nouveau progrès; mes gains surpassaient leurs parents que j'avais conservés. On pouvait apercevoir, dans ces semis aux caractères persistants, le point de départ d'une race nouvelle.

"Je continuai dans cette voie; au bout de quatre ans, j'étais en possession de quelques sujets fort remarquables. Les pétales des fleurs étaient amples et plus longues; ils se redressaient comme les ailes d'un papillon qui s'apprête à prendre son vol.

"La race se caractérisa chaque année davantage. "Encouragé par le résultat déjà obtenu, je m'occupai à rechercher la diversité des coloris. Après quatre années je ne possédais dans mes semis que des plantes à fleurs rouges; j'avais en triant les sujets pour la reproduction toujours écarté les fleurs les moins brillantes. Il s'agissait maintenant d'obtenir des fleurs à couleur pâles. Des efforts nouveaux furent fait dans cette voie; je vis au bout de deux ans après apparaitre la première fleur aux pétales blancs et à onglet rouge; dès lors les croisements se multiplièrent au point qu'après la novicième année la perfection des formes et des coloris est telle que tous ceux qui voient mes Cyclamen Papilio ont noué à reconnaître leur mérite et leur perfection des fleurs."

branch. This was, however, considered sufficiently curious to follow up, and we seeded it with its own pollen.

"The young plants from this showed a decided improvement, the rib in some cases showing a marked tendency to branch. The best varieties (ten in number) were again fertilised with their own pollen, and the plants now being exhibited by us have resulted, although, needless to say, they are among the finest obtained up to the present, though all show a further improvement, every flower having a well-branched feather on the petals.

"We have this year found some colour in one plant, and we believe we shall have no trouble in obtaining crested flowers in a variety of colour."

The corolla segments of Cyclamen have no mid-rib. The appearance of such a structure is a reversion to the original leaf-type. The development of a crest from a mid-rib carries reversion very far back indeed. The branching of a leaf-structure in the plane in which it is expanded is common enough; branching in a plane at right angles to this is rare. Leafy outgrowths frequently occur from the mid-rib in the Cabbage.* In this case the structure of the leaf approximates to that of a stem, of which, indeed, the leaf may be regarded as a modification.

An interesting fact with regard to this singular variation is that it has appeared more than once, and independently. It first occurred in 1885, but seems

very Lord Kelvin as insisting "that the world at a very early period was subjected to more rapid and violent changes in its physical condition than those now occurring;" and he adds, "Such changes would have tended to induce changes at a corresponding rate in the organisms which then existed."‡ That changes may be effected with considerable rapidity cannot, I think, be denied.

2. It is further, I think, abundantly proved in the present case that, though sudden variations do occur, they are, as far as we know, slight so long as self-fertilisation is adhered to. The striking results obtained by cultivators have been due to the patient accumulation by selection of gradual but continuous variation in any desired direction.

3. The size which any variable organ can reach does not appear to be governed by any principle of correlation. Large flowers are not necessarily accompanied by large leaves. Under natural conditions size is controlled by mechanical limitations and by the principal of economy. Nature cannot afford to indulge in anything unnecessary for the purpose in view.¶

4. The general tendency of a plant varying freely under artificial conditions seems to be atavistic, i.e.,

* *Gardeners' Chronicle*, 1885, p. 536.

† *Revue Horticole*, 1897, pp. 98 and 130.

‡ For a general discussion of the principles of variation and specific stability, see *Nature*, vol. 51, pp. 459–461.

§ *Origins*, 6th ed., p. 286.

¶ See Darwin, *Origins*, 6th ed., p. 117.

* Masters' *Teratology*, p. 455.

to shed adaptive modifications which have ceased to be useful, and either to revert to a more generalised type or to reproduce "characters which are already present in other members of the same group."* This conclusion must, however, be accepted with caution, for we must remember that in a case like the present we are only acquainted with variations which have been preserved with a particular end in view.

5. The case of "crusting" shows that the plant still possesses the power to strike out a new line, and to develop characters which would even be regarded as having specific value, as in the total change which has been effected in the form of the leaf in *Primula sinensis*. If such a race developed any degree of sterility with other races, it would have satisfied Huxley's criterion for the artificial production of a new species.

TREES AND SHRUBS.

RITES SPECIOSUM (R. FUCHSIOIDES).

Of the two sections of the genus *Rites*—the Gooseberries and the Currants—the latter contains much the more important species when regarded as ornamental shrubs. Amongst the former, *R. speciosum* is by far the most attractive. It is frequently treated as a wild-plant, and does, no doubt, flower with greatest freedom in that position, but that it is perfectly hardy, and blossoms profusely when planted in ordinarily exposed positions, is shown by a specimen flowering in the arboretum at Kew. The flowers appear (usually three together) in short racemes from each joint of last year's wood, and hang in a long row from the underside of the branches. The calyx is the most prominent feature of the flower, being half an inch long, tubular, and almost entirely covering the petals. It is of a deep scarlet colour, and is covered with short hairs at the base. Standing out beyond the calyx, and twice or thrice its length, are the stamens, which have the prevailing red of the flower, but of a pinkish tinge. The leaves are like those of the common Gooseberry, but smaller, and three spines guard each joint of the wood. Its recommendations as an ornamental shrub consist in the bright and unusual colour of its flowers, and in the Fuchsia-like grace with which they hang from the shoots. It is a native of California, and was first introduced in 1828, but it had been discovered by Archibald Menzies some thirty years previously. [Our experience is, that this species needs protection in the winter in the Midlands and the North. Ed.]

CYTISUS ALBUS.

So few among the *Cytisus* and *Genista* have other than yellow flowers, that the white ones of this "Portugal Broom" give it a special value. But besides the colour of its flowers, their great abundance and the striking habit of the shrub entitle it to a place in the first rank among hardy plants. It produces a mass of slender, wiry, green twigs, whose abundance give it the character of an evergreen. The leaves, indeed, are never much in evidence except in seedling plants, when they are trifoliate; in older specimens they are usually quite small, simple, and linear. The flowers are milk-white, and appear two or three together in a fascicle at each node. The habit of this shrub is somewhat erect when young, and with age it becomes bare at the base, the crowded mass of young branches then forming a heavy, but not ungraceful, crown. In early May this is transformed into one single mass of white, and is most beautiful and striking. This *Cytisus* grows 6, 10, or even more feet high, and is useful for planting towards the back of a shrubbery where the smaller things in front hide its naked base. When planted in more exposed places, it should be frequently stopped when young, so as to get plenty of branches near the ground.

RHODOTHAMNUS CHAMÆCISTUS.

To most persons this small growing shrub is better known, perhaps, by repute than by experience in

cultivating it. It is one of a sufficiently numerous class whose cultivation it is much easier to tell other people about than to successfully accomplish oneself. It was introduced considerably over a hundred years ago, Messrs. Loddiges, of Hackney, having had seeds sent to them from the mountains of Carniola in 1786. Yet during all these years it has been rare, and seems likely to remain so, for it is one of the most difficult of Ericaceous plants to thoroughly establish, even in gardens where *Rhododendrons* and similar shrubs thrive perfectly well. There are, however, a few places where it succeeds (with Messrs. Backhouse, of York, for instance), and it is then one of the most charming of the dwarf Ericaceae. It is a dwarf proeminent shrub, whose branches are thickly set with small ovate, hairy leaves. The flowers are borne in April and May in clusters, at the ends of the branches. From two to four are in each cluster, the flat corolla being a little more than 1 inch across, and of a pale pink tint. A plant has flowered recently in the Kew nursery, where it was planted some years ago in a niche between two stones, and it is now become established. W. J. E.

NARCISSUS POETICUS.

MODERN horticulture has come to look upon any well-marked species of a valuable genus of cultivated plants that is at once beautiful in itself and fertile in both seed and pollen, as not only an end but a means. Or rather, we should say, that such a plant has a three-fold aspect, its own beauty and worth as it exists at present, its possibilities of evolution *per se* to enhanced perfection of size, form, and other desirable attributes, and its value as a factor in the production of new forms when interbred with other species. *Narcissus poeticus* is of high merit in all these ways, though, strangely enough, the second, namely, its improvement within its own limits, has been altogether neglected, so far as I know, save for some attempts of my own. It is remarkable that this flower appears both first and last of the cut Narcissi which fill the markets for quite five of the winter and spring months. Enormous quantities of the early Pheasant-eye *Narcissus p. ornatus*, are forced into bloom in January and February, and for the market gardener there has probably been found more money in this than in any other "Daffodil." In the middle of May the double poeticus, a very attractive Gardenia-like flower, closes the season of the *Narcissus*. These two, with the old-fashioned *recurvus*, known exclusively as the Pheasant-eye *Narcissus* before the advent of *ornatus*, are the popular varieties, but several others are well distinguished, as might be expected from the wide geographical distribution of the wild plant. Roughly speaking, it extends in latitude from Switzerland to central Greece, and in longitude from the Western Pyrenees to Transylvania, whence Mr. Wolley Dod informs me he has received collected bulbs, and possibly somewhat further east, as it has been asserted that the cultivated variety known as *grandiflorus* was brought from the Crimea. In days when plant-geography was less exactly studied than now, *N. poeticus* was sometimes admitted into the British Flora, but the form in which it occurs, apparently wild, in a few English localities is that of *patellaris*, the type so abundant at Vevey, Montreux, and other Swiss places of summer resort, whence it was, no doubt, brought to England by tourists, and subsequently naturalised by escapes from gardens. This flower has broad, firm perianth divisions, and the corona very flat, whence its varietal name, with a clear ring of white inside the narrow red rim; it flowers very late, and seems to be the single form of the common double poeticus. Generally speaking, the species diminishes in beauty, according to the florists' standpoint, as it passes from west to east. In the high Pyrenees, where, in July, it whitens the mountain pastures, especially in the Luchon district, it is very variable, but many fine well-formed flowers may be selected, some with the corona wholly red and not merely edged with colour. Mr. James Allen, of Shepton Mallet, several years ago collected and kindly gave me bulbs of some of the best of these; they were late-blooming, and unfortu-

nately did not prove robust in cultivation. The precise origin of *ornatus* has not been ascertained, but the wild flowers which resemble it most closely in form and earliness have come to me from Provence and North Italy. On the North Italian mountains poeticus takes a very dwarf alpine habit, but as regards shape of flower, I have picked out exact counterparts of *ornatus* on the high pastures above the Lake of Como in the month of April. It is curious that stray bulbs of this dwarf plant were brought to England from the vicinity of Lake Maggiore in Dean Herber's time, as a rarity, and named *N. p. verbanensis*. It is really the prevailing *N. Italian* type, and extremely abundant. *Ornatus* was known in the Paris markets long before its introduction into England. This early, white, fragrant flower, absolutely vigorous, of rapid increase, and blooming from the smallest bulb, is one of the very best additions of this generation to our spring garden. The variety *poeticum* may also be of Italian origin; it has the entire corona bright red, but the perianth is of flimsy, semi-transparent substance. It flowers in succession to *ornatus*, but is less robust in most soils. Another Italian variety, *precox*, flowers very early, but is otherwise of inferior merit. Further east, *N. poeticus* assumes a narrow-petalled form. Mr. Baker tells me that the only Greek specimen in the Kew Herbarium, from the Pindus range, has divisions a quarter of an inch in width; and Mr. Wolley Dod's plants from Transylvania bore the same type of flower. It is not, however, safe to conclude that the garden varieties named *angustifolius* and *stellaris* are necessarily of eastern origin, for wherever the wild poeticus abounds, narrow as well as broad-petalled flowers occur; and among my own seedlings from the finest circular types, a percentage of flowers appears with almost linear segments.

There is a variety in cultivation to which the name poeticus *versus* of Linnaeus has been given, quite arbitrarily, I think, small, with round, well-shaped flowers; this is said to be of Greek origin, but I know not on what authority. *Vr. grandiflorus* has the appearance of a form from Eastern Europe; it is a somewhat ungainly flower, with narrow, spreading segments, and is of little value for the garden. Of the common *recurvus*, which must, I think, be referred to the wild lowland type of poeticus prevailing in South-western France, there seem to be superior and inferior varieties in cultivation, some having flatter, broader divisions than others. A distinguishing character is its lax foliage, reflexed for half its length, whence possibly its varietal name, though this has been thought to refer to its reflexed perianth. This old flower is still of considerable market value when highly cultivated. Some other varieties of poeticus with distinctive names are not of cultural importance. The vain attempt has been made to identify the many sorts enumerated by Parkinson under elaborate Latin names, which are merely descriptive of the minute differences in plants which he received from foreign collectors, and probably often from the same mountain-side.

N. poeticus has had a very large share in the creation of our modern garden Narcissi, since Deau Herber, half a century ago, verified by experiment his guess that *N. incomparabilis* was a hybrid between it and the Trumpet Daffodil. To it the classes known as *N. incomparabilis*, *Barri*, *Nelsoni*, *Leedsii*, *Burbridgei*, owe their robustness, their extended blooming season, and the orange or red of their crowns, which is in all cases the solution or suffusion of the concentrated colour in the purple or deep red thread round the poeticus crown. A noteworthy proof of the power of poeticus to give vigour to its hybrids is found in the group *N. Leedsii*, many of its varieties being of indomitable constitution, though their other parent, the white Trumpet Daffodil, is the most fastidious of its kind.

It is surprising, if we consider the many fine qualities of this plant, that while so much pains was bestowed upon the production of its hybrids, nothing was done towards the improvement of the poeticus pure and simple. It is certain that, by careful seed selection and intercrossing of varieties which supplement one another's deficiencies in these points, it

* See Darwin, *Orig.*, 6th ed., p. 127.

may be at least as largely advanced as the Trumpet Daffodil has been in size and in attractiveness of form and colour. And such improved poetics would in turn give us improved hybrids.

The cultivation of the poetics is easier than that of most other Narcissi, but two memoranda should be made—first, that it is more capable than the rest of assimilating nitrogen—or, in plain words, that it

AMELANCHIER CANADENSIS VAR. OBLONGIFOLIA.

THE species and varieties of *Amelanchier* are by no means easy to distinguish one from another. To aid in the task we now give an illustration (fig. 115) of a plant which was in flower recently at Kew, and a description of which by Mr. Bean was given in a recent issue (p. 265).



FIG. 115.—*AMELANCHIER CANADENSIS* VAR. *OBLONGIFOLIA*.

likes farm-yard manure; and, secondly, that it is the earliest to make fresh root-growth, and therefore should be the first to be attended to in the matter of lifting and replanting. On poor, dry soils, the double poetics is apt to bear blind spathes; but where it is amply supplied with manure and water, it yields flowers as fine as white Camellias. *G. H. Engleheart*

details of experiments with various manures on different plots of Sugar-cane. The plots were duplicated, but the variations in the yield of some of these duplicated plots is greater than the variation caused by the application of the manure. This plainly brings out the fact that the variations in yield due to soil condition are more important than those produced by the action of manures.

HONG KONG.

The typhoon which swept over the Colony on July 29 was the severest experienced here since the disastrous one of 1874. The gardens suffered very severely by the loss and injury of trees and shrubs, which, together with the losses in 1874 from successive typhoons of that year, left traces which will take many years to recover from. The plant-houses and other structures received but a small amount of damage owing to timely and efficient precautions having been taken to secure movable parts in such a manner as ensured their safety. Portions which were carried away were renewed in a more substantial manner. The glass-houses came out of the storm unscathed, with the exception of a few pieces of glass broken by material falling on them.

Many trees and shrubs were completely stripped of their foliage, but new growths of branches and leaves were quickly made, and in some instances trees which flower usually only once a year produced a second crop of flowers on the new shoots. The rainfall for the year as 77.6 inches.

SINGAPORE.

The most interesting item in the *Report of the Botanic Garden* for home readers is the account of Mr. Curtis' botanical tour in the Malay States, from which we extract the following paragraphs:—

"On the second day we tacked about without making much progress until 5 P.M., when we landed on Pulau Panjang to do some cooking, and while this was being done I collected a few plants. *Cirrhopetalum Medusa* appeared to be abundant on rocks in this island. At 6.30 P.M. we started again with a fresh breeze, standing straight across for the picturesque islands near the entrance to the Kasum River, under shelter of one of which, Pulau Prabat, we anchored until 5 A.M., when we got under way again. At 7 A.M. we landed on a small island to cook and collect plants; the most interesting kinds found here being two species of *Begonia* and two of *Pogonia*, the native name of one of the latter being 'elephant ear.' From this place we proceeded slowly against wind and tide to Kasum, which was reached between 3 and 4 P.M., so that I had actually been about forty-nine hours from Tongkah.

"The scenery among the islands before entering the Kasum River is magnificent, scores of islands of the most fantastic forms rising abruptly from these to a height of several hundred feet. Similar scenery may be seen in Lingkawi, but on a much reduced scale. On arrival in Kasum I sent my letters of introduction to the Governor, with a request for an empty house if possible. In a short time I received a message that the Governor was suffering from fever, and would not be able to see me for two or three days, but that a house was being prepared for me. This was the one decent-looking house in the village, originally intended, I was told, for a post-office; but as soon as the men commenced cleaning it out, it was found to be unsafe, so I had to go into a Chinese attap-house in the main street. For a place of its size, and it is a village of about a hundred houses, and perhaps 700 to 800 inhabitants, Kasum is the most miserable-looking place I ever set eyes on. The main street is overgrown with weeds, and in places knee-deep in mud. On either side are tall Bamboos leaning at all angles with the remnants of banners dangling in the breeze, the remains of the decorations of some religious festival long past. The houses are of plank and attaps, with very sharply-pitched roof, and a sort of covered 5-foot way in front; but it is only in places that one can cross from one side of the street to the other without sticking in the mud. A few days' residence in this place has a

COLONIAL NOTES.

ANTIGUA.

The report of the results obtained on the Experimental Farm in this island by Mr. Watts, Government Chemist, and Mr. Shepherd, Superintendent of Skerrett's School, has reached us. It contains

most depressing effect. The morning after arrival, I collected Orchids, &c., along a road that was commenced three or four years ago, and cut for a distance of about 4 miles to a place called Wattam, where there is a Bhuddist temple in a cave in the limestone rock with numerous figures rapidly going to decay. One of the figures in a reclining position is about 45 feet long. I spent some time in botanising on this hill, and collected several interesting plants. One of the priests showed me a plant of Dendrobium Farmeri fastened on a block of wood which he assured me was very rare, and, so far as my experience goes, it is so, for I only collected two plants of it during the time I was there.

"On the second day, the Governor sent me a man who spoke Malay to accompany me anywhere I wished to go, and to assist me generally. Two days I went down the river to the limestone hills, and on another day walked across to Pongah and slept there, returning by another route the following day. The distance I estimate to be about 10 or 12 miles. Pongah is not so nice a place as it was in the old Raja's time; things are fast going to decay. It is interesting to note that several natives have a few Orchids growing around their houses, and one has quite an interesting little collection; and this, they told me, was the result of my previous visit. Dendrobium Farmeri is evidently the kind they prize most, which shows good taste on their part, but it is scarce, and they set a value on them that prevented me from buying. This is abundant in Mergui, and Pongah is apparently about its southern limit. One very interesting Dendrobium I saw in a garden which I was most anxious to get, but the owner would not part with it; he however, gave some flowers to dry which will, I hope, be sufficient for determination, but I have little doubt it is an undescribed species. On the limestone islands I collected a great number of interesting, and some, I believe, perfectly new plants, among the latter being a Ginger, Balsam, and Arum.

"Many plants we observed that it was quite impossible to get at, but, on the whole, I made a very satisfactory collection. The Ginger, which I believe to be new, and of which I only saw a single flower, although it had been flowering freely not long previously, grows in the clefts of the hardest rocks, where it is impossible to get at the roots without blasting them out. I saw hundreds, but only succeeded in getting about half-a-dozen, three of which I have sent to Kew. Of the Balsam, I dried a good series of specimens, and collected a nice lot of seeds, and of the Arum tubers.

"In one place, I saw enormous clumps of Cyrtopodium, but quite out of reach, and also a small growing *Aerides* (*Aerides affine*). For miles round Kasum the virgin forests have all been destroyed by the paddry-planters, and the present vegetation is composed largely of Bamboos, of which three or four species are so abundant that they may be said to be the prevailing feature of the vegetation on all the low hills.

"A lazier lot of men it would be difficult to find, and the only thing that really livens them up is a cock-fight, then the village turns up like one man!"

THE WEEK'S WORK.

PLANTS UNDER GLASS.

By G. H. MAVCOCK, Gardener, Luton Hoop Park, Luton.

Celosias and Cockscobs.—Repot these as soon as necessary, and keep them in a position close to the glass in a moderate temperature, and do not permit them to want for water. It is good practice to plunge the pots to the rims in Cocoa-nut fibre if the weather be hot. Keep a sharp look-out for thrips and red-spider.

Bourcivalis.—Preparations should now be made for those intended to be planted out in frames such as those from which early Potatoes have been dug. Take out some of the old soil, and replace with a mixture of loam, leaf-mould, and sand. Plants that were cut hard back after flowering will require more space than the spring-stuck cuttings. These latter, however, I prefer to keep in pots all the season. Put out the old plants at 2 feet apart, and shade a little from strong sun until the fresh roots have obtained a hold of the new material. It is of the utmost importance that every plant should be clean and free from insects before they are planted out. Syringe the plants frequently. Move on the spring-stuck

cuttings into 5-inch pots, and keep in a temperature of 60° by night and 70° by day, pinching the points to induce a bushy growth. They should be moved on again into 7-inch pots as soon as these are well filled with roots. They may then be placed in a sunny position in cold frames where they can be kept close to the glass. The lights may be removed altogether about the middle of August.

General Work.—Shake out and pot on old stock-plants of *Euphorbia Jacquiniana* and *E. pulcherrima* filled with roots. The cuttings have now taken, and place them in a gentle bottom-heat for a few weeks; but when it is seen that young roots have been made, gradually harden off the plants, and treat them similarly to spring-stuck cuttings. Afford shade to *Calceolarias* in bloom, water the plants with care, and remove all decaying blooms. A little air may be admitted to the structure by night and day to prevent damping, and the watering should be done early in the morning. Remove into larger pots all winter-blooming plants as soon as they are ready, such as *Sericographis*, *Centropus*, *Agathia colostis*, &c. If the cuttings were struck five or six in each pot, they should be divided before the roots become entangled. Examine young plants of *Cyclamen* for thrips, and if any are observed, fumigate the plants at once; inattention in this respect may lead to blights. A lens is requisite to detect white thrips that may be secreted in the crowns. *Salvias* if struck new will flower in small pots, and the old plants may be put out in the open ground to grow into extra-sized specimens. If they be planted in a shallow trench much less labour in watering will be requisite. Afford copious supplies of water to *Canas* in pots, and give them weak manure-water once each week.

THE KITCHEN GARDEN.

By W. POPE, Gardener, Highclere Castle, Newbury.

Asparagus.—Apply a good dressing of common salt to beds now producing heads. If this be applied in dry weather it will help to keep the beds free from weeds without in the least injuring the young tops of Asparagus, and when carried to the young tops of it becomes a very good manure. If the produce is weak from the beds being overtaxed in previous years, cutting should be discontinued early. Occasional dressings of guano may be applied during showery weather.

Mushrooms.—Continue to make up Mushroom-beds in the open as fresh manure is available. A good proportion of straw-litter should be left with the droppings for these out-of-door beds, but care must be taken that the material be not too dry when used, this being a frequent cause of failure. Should more moisture be desirable, sprinkle well the manure with water, and throw it into a heap, turning it daily for a few days before making up the bed. Beat or tread this firmly together, and insert the spade when the temperature is about 75°. Afterwards cover with 2 inches of good garden soil, which should be beaten firmly together with the spade, and covered with clean straw or mats.

Peas.—A good breadth of these may be sown now to come into use in August. At this time of the year it is sometimes advisable to sow in trenches, which will help them to withstand drought when coming into bearing. The manure used should be rich, and thoroughly decomposed. Well work this into the bottom of the trench, formed by taking out 1 foot or 15 inches of the surface soil. Return as much soil to the trench as needed, and tread firmly before sowing the seed. Should there be any likelihood of a break in the supply earlier, sow a row or two of an early variety at the same time as the foregoing, which will tend to lengthen the season of bearing. Earth and stake advancing crops before they are tall enough to be injured by high winds.

Hoing and Cleaning Vegetable Crops.—Use the Dutch hoe frequently amongst growing crops for the double purpose of keeping the ground clean, and by a loose surface lessening the amount of evaporation during hot, dry weather. Should any weeds have arrived at the flowering-stage, let them be pulled up, and taken off the ground before hoing begins. In the case of many weeds, such as Groundsel, Charlock, &c., if the flowers are allowed to open, many seeds will mature after the plants are cut off; therefore, clear weeds are young, much labour will be saved, and the soil kept in the best possible condition. Water any newly-planted vegetables that may be suffering from drought, those that may have been turned out of pots being especially liable if neglected in this respect, as the roots require time to penetrate the

surrounding soil. Newly-planted Celery requires frequent supplies, and freshly-planted Tomatoes at the foot of walls or fences. Remove the lower heads from Rhubarb and Seckale, as these weaken the roots to no purpose. Old plantations of these will be greatly benefited by watering with liquid-manure, more especially the former. Discontinue pulling Rhubarb as soon as possible, or at least from a number of the roots that will be required to furnish produce early next year.

FRUITS UNDER GLASS.

By F. HAGRS, Gardener, Eastnor Castle, Leicestershire.

Succession Peaches.—The trees which follow these in the early house will now have passed through the stoning period, and if they are not young trees, and are carrying good crops of fruit, occasional applications of liquid-manure, or failing that some artificial manure, will greatly improve the size and quality of the fruits. Ordinary fish-manure I find to be very beneficial to Peaches, and if the foliage is lacking in colour, one or two moderate applications well washed in with tepid water will speedily induce a healthy dark green tint. I first tried it for a few years past on two very old trees in tubs that had been condemned to the rubbish heap but after two seasons the trees so improved that they are now carrying good crops of fruit, and looking as healthy as any of our young trees. If the fruit has not been exposed to the light and sun, it should be done at once, and all shoots not required for next year, and that are not bearing fruit, should be removed, thereby giving next year's bearing wood a better chance to ripen well. Use the syringe frequently, especially in the afternoon at closing time, to prevent red-spider getting a footing. The house may now be closed a little later as the sun is likely to be powerful, and Peaches are impatient of a high temperature. If the thermometer shows signs of rising above 85°, a little top-air should be left on for half an hour. I firmly believe that a high temperature is sometimes the cause of Peaches and Nectarines casting their fruits.

Late Houses.—Trees that have been retarded as much as possible will have set their fruits ere this, and usually in these houses there is a very heavy set; therefore no time should be lost before thinning is commenced, otherwise a needless strain will be laid upon the trees. Disbud the shoots gradually, and at the same time rub off all the small and deformed fruit, leaving two or three which are in the best position on each shoot. In a few days afterwards, when it can be seen for certain which fruits are taking the lead, remove the others, taking care that the crop is as evenly distributed as far as possible over the tree. If it is wished to keep the trees as much as possible, ventilate the house all night, or as often as likely to be frost or very cold winds. Heel-in the permanent shoots as soon as possible, taking the points out of others not required. If there are any signs of aphid, fumigate lightly on successive evenings after the sun has gone down, well syringing the trees early next morning before the sun gets powerful.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower, Burford, Dorking.

Phalenopsis.—Few Orchids equal these in graceful beauty when in bloom, the long arching spikes of such well-known species as *P. Schilleriana*, *P. amabilis* (grandiflora), *P. Aphrodite*, *P. Sessiflora*, *P. Stuartiana*, *P. intermedia*, *P. Portei*, *P. casta*, and *P. leucorrhoda*, produce large spikes of flowers that last in perfection for many successive weeks. These plants require the temperature of the East Indian house, or the warm humid atmosphere of the plant-stove. They appear to thrive best when suspended close to the roof-glass on the north or shady side of the house, and where they obtain a fair amount of light, but not actual sunshine. Such sun-beamed varieties as *P. Lueddemanniana*, *P. Marie*, *P. speciosa*, *P. tetrapis*, *P. violacea*, *P. cornu-cervi*, *P. sumatrana*, *P. rosea*, *P. Micholitzii*, *P. Manni*, &c., are very susceptible to injury from strong light at any time, stand them therefore low down upon the stage where they may be overshadowed by taller-growing species. The semi-terrestrial *P. Esmeralda* grows freely when suspended to the roof, and the same remarks apply to the deciduous *P. Lowii*. At this season, the majority of these plants have passed their flowering period, and have commenced to make fresh leaves and roots, therefore if any of the plants require to be top-dressed or repotted, it may be done. It is not good practice to rebasket the plants every year, as they dislike to have their roots detached

from substances they may be clinging to, but they will remain healthy in the same baskets for several years, providing the Teak-wood does not decay. Those plants that are in a healthy condition, well rooted, and have sufficient room for further development, should be relieved as much as possible of the old moss, which should be replaced by new material. Plants that require such attention should be placed at one end of the house, and allowed to become somewhat dry. In the case of those that require more space, great care is necessary in removing them from the old baskets, as the young roots are very susceptible to injury. Carefully pick out the sphagnum-moss and drainage material, then soak the basket, &c., in tepid water for a minute or so; the roots may then be easily detached from the wood with a sharp, thin-bladed pen-knife. It is important that new teak baskets be used, as the young roots attach themselves more readily and firmer to new wood than to old. In transplanting the plant into the new basket, carefully arrange the roots around the teak rods, and keep the collar of the plant a trifle above the top rod. Then proceed to fill the basket to three-fourths of its depth with clean broken crocks. The remaining space around the base of the plant should be filled with living sphagnum-moss, mixing some small crocks with it to assist drainage. This is very important, because if the roots are buried in a solid heap of moss, which may become saturated, they will quickly decay. Weakly plants, having few or no roots, should be placed in small Orchid-pans, and suspended from the roof. When they are in better condition, they may be transferred to baskets again. After top-dressing or re-basking, very little water is necessary. On no account should the plants be saturated by the usual dipping, it being safer to sprinkle the moss on the surface and around the sides of the baskets with tepid rain-water, applied through a fine rose watering-can. Afford no more water than is necessary to keep the surface-sphagnum alive, and prevent water getting into the centre of the growths. In houses where the atmosphere is nearly always at saturation point, insect pests rarely attack Phloxopsis; but where the house is naturally dry, thrips multiply with great rapidity, and quickly disfigure the handsome foliage. Periodical fumigation with the XL All vapouriser is an efficacious remedy; and good results may be obtained by washing the leaves occasionally with a soft sponge and clean rain-water. For a month or two look carefully over the plants at night for slugs.

THE FLOWER GARDEN.

By CHARLES HERRIN, Gardener, Droppore, Maidenhead.

Bedding Arrangements.—In warm districts, the bedding-out of the lower tender plants may now be commenced. If the flower-beds contain no spring-flowering plants, hardy edgings may be put out, and the ground-work of any carpet or other bedding design it is intended to use. A more pleasing style than carpet-bedding, however, is now prevalent, and plants of somewhat hardier and less formal characteristics are used. As these notes are written the weather is anything but genial, frost occurs almost each night, and by day a cold northerly wind and little sunshine is present. No tender plants should, in such circumstances, be exposed until a change takes place. Even in the case of Pelargoniums that have been hardened-off for some time in cold pits and frames, it will not be advisable to plant in such inclement weather, unless some temporary shelter can be provided on frosty nights. Where Sedums, Echeverias, and such-like, are used for edgings to beds on grass, the Sedums may be pulled into pieces, selected and re-planted after the edges have been prepared by adding a little new soil. The variegated grass—*Dactylis glomerata variegata*—makes a capital edging-plant, and is perfectly hardy. Old clumps, if lifted now, and pulled into small pieces, will make nice plants in a few weeks, and form a suitable edging to beds of scarlet or pink Pelargoniums. Summer-flowering Violas, when used in mixture with Pelargoniums, or as a ground-work for a mixed bed, thrive best when planted early; but if they are not already planted, let this be done at once. The dark purple Viola, Archie Grant, associated with the variegated-leaved Lady Plymouth Pelargonium, is an effective arrangement; and a white-flowering Viola, as Mrs. Gray, may be used in conjunction with the Heliotrope, Geranium, or Veasiums scarlet-flowered Pelargoniums. Where a taller and mixed bedding arrangement is possible, Fuchsias are admirable subjects; and if plants have been grown on as advised in early Calendars, they will now be strong plants, 4 to 5 feet in height, and well adapted for this purpose. Fuchsias such as these, dotted over

large beds, with a carpeting of Violas, and interspersed with tuberous Begonias, 18 inches to 2 feet high, together with a suitable edging, make a pleasing arrangement. As examples, I may give the following—Fuchsia Madame Cornillon, and crimson or red-flowered tuberous Begonias, on a ground-work of Viola Bluebell, and edged with the golden-leaved Lysimachia Nummularia; Fuchsias, Mrs. Marshall, 4 to 5 feet high, bed carpeted with Viola Bluebell; Begonia semperflorens, Duchess of York, 1½ foot, edged with a good band of the trailing Fuchsia Meteor; dark Heliotrope Florence Nightingale, 4 to 5 feet, with a scattered undergrowth of Nicotiana affinis and scarlet-flowered Pelargoniums to half the height (about 2 feet); ground-work, Alternanthera magnifica, with an edging of Mesembryanthemum cordifolium variegatum.

Herbaceous Borders.—Varieties of Peonia moutan in sheltered positions are now in flower, but the subjects of the flower-stems completely shrivelling many shoots, the flower-stems completely shrivelling up to a less extent. Later-flowering varieties may be relieved of some of the small flower-buds if large blooms are desired; if not, these back buds open later, and so form a slight succession, although the flowers are smaller. A good soaking of liquid-manure is of much assistance to established clumps of these Peonies. Delphiniums in variety should be staked and tied before they become long enough to fall over, and so grow out of shape; when this occurs, they cannot be easily tied erect again. Other subjects requiring short stakes and ties are Oriental Poppies, Asphodelus albus, Sweet Rockets, &c. During the present dry weather, keep all borders well hoed over. The past week, although cold, has been very favourable for hoeing and cleaning.

THE HARDY FRUIT GARDEN.

By H. W. WARD, Rayleigh, Essex.

Training the Young Growths of Wall-Trees.—The training of young growths of wall-trees requires almost daily attention during the present and four following months. The terminal growths of leading shoots should be secured in position on the wall by means of nails and wire, and the wall is wired, layers of horizontal or lateral growths between each pair of branches with Birch or Hazel twigs. In the case of walls provided with a series of wires, fixed either horizontally or vertically at distances of 6 inches from each other, small bands of raffia or bast are employed for the same purpose. Twist the matting once round the wire to prevent its shifting from the desired position before tying the individual growths thereto, being careful to leave ample room in the ligature for the free expansion of the shoots. Peach and Morello Cherry trees, owing to the multitude of young growths, require prompt and frequent attention during the period of growth, the treatment being identical in each case. A sufficient number of the current year's growths being laid in for producing fruit next year, all surplus shoots, together with fore-right growths, being kept persistently pinched (and in some cases rubbed off) to within one joint of their origin. Very strong growths should be cut back to the lowest lateral or removed in order to direct the flow of sap into the weaker ones. Apricot, Plum, and Pear trees require the same treatment as regards the training of young growths at regular intervals over the available wall-space, and the pinching of the same in the manner and for the purpose described above.

Insect Attacks.—Care should be exercised to keep all hardy fruit trees free from the attacks of aphid and red-spider, and of midew; and where these undesirable visitors have effected a lodgment on the young growths, prompt and effective remedial measures must be taken to dislodge them. The most difficult of dislodgement is the black-fly, which almost confines its vigorous and persistent attacks to the young growths of Cherry-trees. I have sometimes found it necessary to dip growths thus attacked in saucers containing a solution of the "XL All Insecticide" (in the proportion of one part to thirty of water), or tobacco juice and water at the rate of one ounce of the former to four gallons of the latter. The XL All Insecticide applied as above to Peach-trees affected with either green-fly or red-spider will have the desired effect. However, the aim of the cultivator should be to keep his trees—especially wall-trees—clean and healthy by a vigorous, timely, and well-directed use being made of clean water applied to the trees by the hand garden-engine or syringe, in addition to keeping the soil about the

roots uniformly moist, but should this fail in securing the desired result, recourse must then be had to insecticides.

THE APIARY.

By EXPERT.

Feeding in the Open.—When the apiary has grown to a size that the stocks may be counted by the hundred, the bee-keeper has to get through his work speedily, and outside spring feeding works admirably, especially where time is a consideration. With the food-dish placed in a suitable spot, it is only necessary to pour in the supply on every fine day, when the bees will be found eagerly waiting for it. This occupies but a few minutes daily, and there is no danger of damage, which sometimes occurs from uncovering the brood nest to its detriment; nor is there any fear of mischief happening, as it may with the ordinary syrup stimulating feeder of the bottle and stage pattern, such as allows the syrup to run down amongst the combs and partly drowns the bees. Any person, if once shown the right way, can give a supply of food outside; and even where but few hives are kept (provided they are isolated from other stocks in the district) the plan of open-air feeding has much to recommend it. Those who have not given this system a trial, and who may desire to do so, should observe the following rules, viz.: (1) Place the syrup dish in some sheltered warm spot, 30 or 40 yards away from any of the hives, and provide in it for a float some spent Tea-leaves or cut straw. (2) Put into an earthenware crock or other dish some granulated sugar; pour over it some boiling water, stirring till all is melted. This liquid must be much thinner than the ordinary syrup used for autumn feeding; it should be about the same as doily-sweetened tea. (3) About 9 a.m. on any fine day pour into the food dish a supply of the syrup—1 lb. of sugar daily, to say, eight or ten stocks, will be enough for stimulating purposes. (4) On dull, cloudy, or wet days the supply should be stopped; but even then, if the weather is not of a nature to chill the bees, some temporary cover may be placed over the dish, so that they can feed in safety. I always medicate the spring food given outside with salicylic acid solution.

The question of the foundation will, no doubt, be in some bee-keeper's mind. I have received enquiries as to which is the best, and I have no wish to say to which one maker over the other, but I can speak as I find, and when I am asked, "Do you like the 'Weed' foundation?" I say, "Yes, I have tried the 'Weed' last season, and liked it very well." I also consider the bees reduced the "system" more in the "Weed" than in that of ordinary make. This season I hope to decide the matter for myself by further trials. I also hope to give the new deep-celled foundation a trial, if any is procurable. Our American brethren are still actively engaged in perfecting a foundation with the treacherous thinner bases.

Anti-adulteration Honey.—Our friends abroad are progressing in the framing and passing of anti-adulteration Acts, heavy penalties being imposed for selling honey adulterated with any other substance, even though the admixture may not be detrimental as food. We in this country want something of the kind to restrain the hand of the spurious honey-maker.

Assisting Increase in Stock.—Comparatively few persons are aware how much may be done by way of assisting stocks of bees to increase in numbers in such a season as the present. It is quite a common occurrence to find six or seven combs of brood in strong hives at the middle of April, and only three or four combs so occupied in the second week of May if such stocks are left to themselves, whereas if they had been "nursed" without disturbing them, fed slowly and continuously, and kept warmly wrapped up, with entrances narrowed in cold and opened wide in warm weather, breeding would have been maintained all along instead of dropping off because of the failure of income, as it so often does. The point is to keep brood nests supplied with food enough and to keep them all up to the head outside, one hole of the honey at all is to be had outside, one hole of the feeder will suffice, but should the bees be kept indoors by stress of weather, three holes may be used; thus, by keeping up a continuous supply of warm food, populations are increased by thousands daily, and little inducement is needed to make them enter surplus chambers and deposit therein all the honey gathered. We do not suppose that much supering will be required before the third week in May, except in some such spots as one we know of where about 700 acres of ground are devoted to Strawberry and fruit culture. In such favoured beeground, some May sections will be possible, but they will be scarce this year.

EDITORIAL NOTICES.

ADVERTISEMENTS should be sent to the PUBLISHER.

Local News.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturalists.

Newspapers.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

APPOINTMENTS FOR THE ENSUING WEEK.

SATURDAY,	MAY 22—	Royal Botanic Society, Meeting.
MONDAY,	MAY 24	{ Linnean Society (Anniversary), Bath and West and Southern Counties Show at Southampton (5 days).
WEDNESDAY,	MAY 26	
FRIDAY,	MAY 28—	Royal Botanic Society, Lecture.

SALES.

TUESDAY,	MAY 25	{ Special Sale of Orchids in Flower and Bud, at Protheroe & Morris' Rooms. { Lilies, Geraniums, Greenhouse Plants, Carnations, Herbaceous Plants in variety, &c., at Pro- theroe & Morris' Rooms.
WEDNESDAY,	MAY 26	
FRIDAY,	MAY 28	{ Imported and Established Orchids, also Callas, at Protheroe & Morris' Rooms.

AVERAGE TEMPERATURE for the ensuing week, deduced from Observations of Forty-three years, at Chiswick.—66° 7°.

ACTUAL TEMPERATURES:—

LONDON.—May 19: Max., 67°; Min., 44°.
 PROVINCES.—May 19 (6 P.M.): Max., 64°, Hurst Castle;
 Min., 44°, Shields.

We hear a good deal about progressive evolution now-a-days, and it suits our complacency to dwell upon it. We look back to the days of our forefathers, and plume ourselves that we live in times when Palms and Pine-apples are sold on costermongers' barrows, and when many things once unheard of, or only as the luxuries of the wealthy, are now in common use. So far good, there has been marked progress in gardening as in everything else. But it is as well to recollect that reversion may and does occur as well as progress, and, therefore, that it behoves us, whether "practical" men or students, to ascertain so far as we are able the influences at work which will result in improvement, and those which, if unchecked, will tend to deterioration. Two articles in our last and present numbers illustrate very aptly the state of affairs. On the one hand, we have the Director of Kew tracing, with the aid of specimens furnished by Messrs. SUTTON, the progressive development of the Cyclamen; and, on the other, we have Mr. FRANCIS GALTON asking, for scientific purposes, what plants it would be most suitable to observe, and how to manage them, so as to bring about, in the shortest and most complete manner, the reversion to the primitive condition? We learn as much or more from our failures as from our successes, and on this principle we shall profit by the practical demonstration of the causes which lead to degeneration. Thus, an investigation which seems at first to be of a purely abstract character, is soon seen to be eminently practical.

Change of circumstances is followed by alterations in structure and appearance—this is what might have been expected; but there are other and very-marked variations which occur without, so far as we know, any correspondingly marked changes in the environment. In the progressive development of the Cyclamen, for instance, there has been no change of

treatment sufficiently great to account for the great variety that has ensued. A change presents itself, the quick eye of the cultivator notes it, favours its development, not so much by any active measures of his own, as by protecting it from injurious agencies and harmful competition. The nascent variation is thus allowed free play, and in this way the gardener is said to exercise selection. The cultivator cannot, however, create the variation, although he can and does control the circumstances which lead to its subsequent progress.

Cross-breeding and hybridisation are, of course, potent sources of change. It is said of the Cyclamen, that it is close-fertilised, that it has never been crossed by any other species. That may be so, but the term close-fertilisation is in this case not necessarily used in an absolute sense. It may happen that the pollen of a particular flower is applied to the stigma of the same flower, but more often it is the pollen from another flower of the same plant that is employed, or from a flower of another plant of the same strain or race. There are, therefore, various degrees of cross-breeding, and no one can demonstrate where cross-breeding ends and hybridisation begins. Some amount of cross-breeding may be expected even in the Cyclamen, but how far that amount is responsible for the changes that are manifest no one can say.

When we have allowed for changes of circumstance and cross-breeding in various degrees, there yet remains much variation, which, so far as we see, is not due to either of the causes we have mentioned. We call it spontaneous, innate, hereditary, a reversion, a property of protoplasm, and so, no doubt, it may be; but we must not allow these didactic expressions to conceal the fact that we are in reality ignorant, and that it behoves us in every way we can to lessen that ignorance. This is what Mr. GALTON proposes to attempt in his experiment.

He wants to breed back to the original form, and to ascertain by what stages and in what time the retrogression can be effected. A hardy annual is to be preferred, and one which has a well-marked variety—as, for instance, when the type has glabrous leaves, and the variety hairy ones, or one in which the variety is of dwarf habit than the type. From this point of view, some of the Sweet Peas seem to us adapted for the purpose, as the wild original plant still exists in Sicily. Dwarf and Runner-Beans might also be employed, but their parentage is not so definitely known. The China Aster is another good plant for experiment. The soil to be employed should be a light one, that is, one that is not rich in nutritive matter—a poor sand, or a sandy-loam to begin with—and employing in each generation a soil proportionately poorer, but not so destitute of food as seriously to affect the health of the plant. The water to be applied would of course be carefully measured, and the quantity allotted would depend on the character of the season.

By some such process of reduced nutrition and successive retrograde selection, that is by continuously selecting the worst forms instead of the best, Mr. GALTON would undoubtedly get something different from that which he started with, but we suspect it would be a depauperated form rather than a representative of the original type. This is precisely the point to be determined; and if any of our readers can furnish hints for the prosecution of the experiment to Mr. GALTON, they will be obliging him and furthering the cause of scientific horticulture.

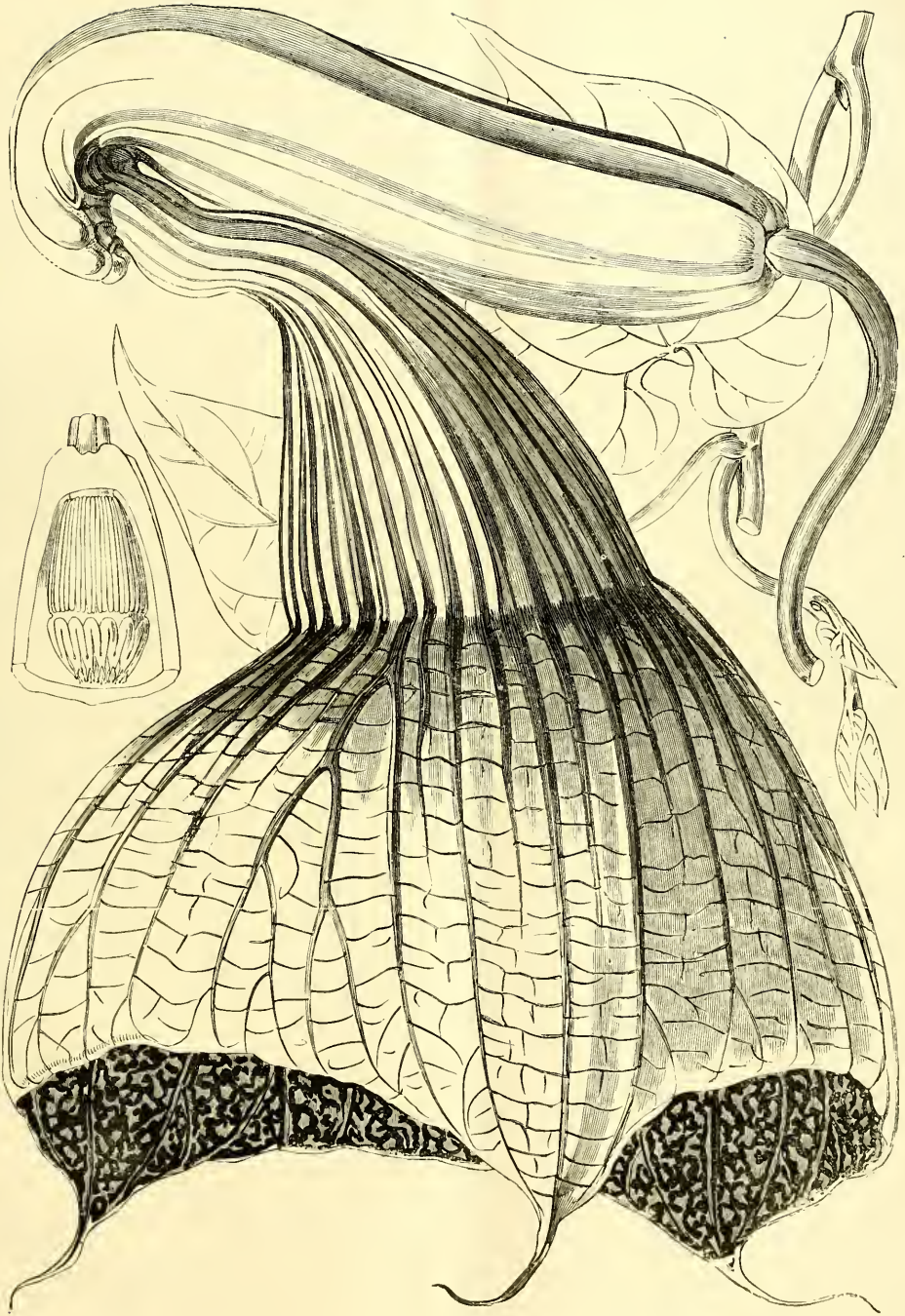
In spite of what may be advanced against this system of garden decoration, on the score of inappropriateness and bad taste, it is certain that it hits the taste of the masses, and that it confers great pleasure to thousands who do not appreciate plants for their own sakes, but only as a display of colour or as parts of a design. It is certain, too, that a well-designed bed, which would be terribly out of place in a garden, or even in a park, when placed in a central situation in a town-square or before a railway station, or amid architectural surroundings, is not always so inharmonious and offensive as might be anticipated. Our continental friends indulge in these strange devices to a larger extent than we do, and however much we may dislike them as a rule, it would be affectation to deny their effectiveness in certain cases. Many are silly, glaring, and little better than outrages on taste. The worst specimens we have heard of are some in the United States. Still, it is not necessary they should be inharmonious and repellent; in the hands of a true artist they are capable of being rendered valuable object-lessons and things of beauty.

For those who have to construct these beds, and are at a loss how to carry out the work and what plants to select, we may call attention to the second edition of a book by Herr KARL GÖTZE. It is entitled *Album für Teppichgärtneri und Gruppenpflanzung*, or album for carpet-bedding and arrangement of ornamental plants. The fact that it is written in German by no means precludes its use by those not familiar with that language. In the first place, there are nearly 300 plans and 366 engravings, all of which are intelligible to gardeners of any nationality. Then there are copious lists of plants, arranged according to the use to which they may be put. These lists are very serviceable, and they afford an excellent illustration of the desirability of the use of Latin, rather than of vernacular names. As it is, the names are as intelligible as the pictures themselves; and neither Russian nor Turk need experience any more difficulty in the matter than the Germans, for whom the work is primarily written.

In order further to make the work useful to gardeners, a short garden dictionary is appended, giving the explanation of gardening terms used in Germany, France, England, Italy, and Holland. We have, therefore, no hesitation in recommending this volume to those of our readers interested in this kind of work, as they will find in it a larger number and a greater diversity of plans and illustrations than in any work of the kind that we know of. It may be had from Herr LUDWIG MÖLLER, of Erfurt, or from any foreign bookseller at the cost of a few shillings.

ARISTOLOCHIA GOLDFIANA.—One of the most extraordinary flowers now in bloom in the Victoria-house, Kew, is this West African species. Our illustration (fig. 116, p. 337) is about half the real size. The flower is naturally pendulous, or nearly so, the lower part of the tube is irregularly cylindrical, cream-coloured, smooth, and bent upwards nearly at a right angle into a funnel-shaped upper half. This part of the tube is marked with prominent purple ribs; and expands into a bowl-shaped three-lobed limb, strongly marked with purplish ribs, the three lobes prolonged into acuminate points; the interior of the bowl is yellowish, thickly marbled with velvety purplish-brown spots. The entire flower is as large as one's hat, and very striking in appearance, just one of those interesting plants which the Floral Committee would pass over as of no commercial value! Although in point of size, form, and colour, it is very attractive, we cannot say so much for the odour,

FIG. 116.—*ARISTOLOCHIA GOLDMEANA* (HALF-SIZE) : FLOWER GREAT-COLOURED, WITH PURPLE RIBS AND SPOTS ON A YELLOW GROUND. (SEE P. 236.)



which is repulsive, though less so than in some other species. The plant has flowered previously in the Glasgow Botanic Garden and at Kew, but is so extraordinary and so rarely seen, that we need not apologise for repeating the illustration.

THE TEMPLE SHOW.—For the tenth time the Royal Horticultural Society will hold its annual flower show in the Inner Temple Gardens on May 26, 27, and 28. There is sure to be a grand display, judging from the large number of entries which have been received, and there is reason to believe that some of the exhibitors will show something original in the modes of displaying their plants. The judges will meet in the secretary's tent at 10.30 A.M.; the Fruit, Floral, and Orchid Committees will assemble at 11 A.M., and the show will open to the public at 12.30 P.M. An interesting feature of the catalogue will be an article on the "Royal Horticultural Society," from the pen of the President, Sir TREVOA LAWRENCE, Bart. Owing to the great pressure upon the society's officials, plants for certificate cannot be entered on the morning of the show. Messrs. H. CANNELL & SONS, of Swailey, will have a large exhibit of Gloxinias, Cannas, Calceolarias, Begonias, and Regal Pelargoniums. Messrs. J. VEITCH & SONS, Chelsea, intend to exhibit novelties from Japan, very fine Caladiums, Streptocarpus of a beautiful strain, &c. The cultivators of Orchids will come out in strong force, and many fine things may be expected from Sir TREVOA LAWRENCE, Baron SCHROEDER, Messrs. SANDER & CO., Messrs. VEITCH & SONS, and others. We are informed by the Secretary of the Royal Horticultural Society that Her Royal Highness the Princess of WALES has signified her intention to visit the show.

H.R.H. THE PRINCE OF WALES, who has recently visited Cheltenham, accepted, on behalf of the Princess of Wales, a basket of choice Orchid blooms, presented to His Royal Highness personally by Mr. J. CYPHER, of the Queen's Road Nursery. The basket contained excellent spikes of *Odontoglossum crispum*, triumphans, and cirrosum, *Cattleya Mendellii*, *Laelia purpurata*, *Cypripedium Rothschildianum* and grande, and *Oncidium-orysanthum majus*, &c. The presentation took place at the railway station, and the Prince graciously informed Mr. CYPHER that he thought the blooms very beautiful, and that he should have pleasure in conveying them home.

THE ROYAL SOCIETY.—Among the fifteen selected candidates for election this year we find the names of Mr. H. J. ELWES and Mr. G. R. M. MURRAY, the head of the botanical department of the British Museum, South Kensington.

HORTICULTURAL CLUB.—The usual monthly dinner and conversation took place on Tuesday, 11th inst., the chair being occupied by Sir J. T. D. LEWELYN, Bart., M.P., and there was a good attendance of members. A paper was read by Mr. GEO. PAUL on the subject of *Amaryllis*. He entered at some length into their history and method of cultivation; he questioned whether a mistake had not been made in endeavouring to get the broad form of flower instead of the long tubular form of *Lilium longiflorum*, and thought perhaps something might still be done in that direction. Their slowness of increase militated against their more general cultivation. An interesting discussion followed, in which many of the members present participated; considerable surprise was evinced at the statement of the secretary, that he had had the hybrids of *A. vittata* raised by the late M. SOUCHEZ growing and flowering in the open air for the last twelve months; they were planted in the same situation as *Amaryllis belladonna*, i.e., in a border in the front of a greenhouse facing south, and passed through the severe winters which we have had of late without injury. A cordial vote of thanks was proposed by Sir JOHN LEWELYN to Mr. PAUL for his valuable and interesting paper, and was carried with acclamation.

GHEENT QUINQUENNIAL.—Oh! how soon the years fly past! On our table lies the programme for the next quinquennial exhibition at Ghent in April next. Seven hundred and sixteen classes are con-

merated. New plants, Palms, Orchids, Aroids, Cycadeæ, Tree Ferns, Azaleas, Rhododendrons, &c., are among the principal objects of competition.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.—We are requested to state that the fifty eighth anniversary festival dinner in aid of the funds of this Institution will take place on Wednesday, May 26, at 6.30 for 7 P.M. (the first day of the Temple Flower Show), at the Hôtel Métropole, under the presidency of the Right Hon. Lord ROCHESTER. As a large gathering is expected on this occasion, the Secretary, GEO. J. INGRAM, 50, Parliament Street, London, S.W., will be greatly obliged if those friends who desire to be present will intimate their intention to him as early as possible, in order that the necessary arrangements may be made.

THE SURVEYORS' INSTITUTION.—The Annual General Meeting of the Institution, to receive the Report of the Council, and the announcement of the result of the election of officers for the ensuing year, will be held on Monday, May 31, 1897, at 3 o'clock. The prizes awarded to successful candidates, in connection with the recent preliminary and professional examinations and junior meetings, will be presented by the president at the Annual General Meeting.

VICTORIAN ERA FUND.—Mr. R. G. WATERMAN, Secretary and Treasurer to the Gardeners' Mutual Improvement Society, Woolton, Liverpool, writes:—"I might be allowed to state as a suggestion for the above what my committee purpose doing. The committee of the Liverpool Horticultural Association have placed at our disposal tabling at their summer show, July 31 and August 2, at Sefton Park, where we hope to arrange an attractive exhibit of plants, fruits, flowers, &c. The proceeds to be devoted to the above deserving fund. This appears a simple means of raising a considerable amount if adopted throughout the country, especially near large towns, where flowers, &c., readily obtain purchasers. Exhibitors and other persons interested would willingly supply the necessaries, and this is especially applicable to Rose shows. If the committees of the societies are unable to make the necessary arrangements, the management could be handed over (as in this case) to some other society, or a few willing helpers.

THE COWTHORPE OAK.—Two young Oak trees were planted on Tuesday afternoon, the 11th inst., at Cowthorpe, near Wetherby, to commemorate the celebrated tree [figured in *Gardeners' Chronicle*, January 19, 1895, p. 73. Ed.], which stands there still, but is greatly decayed, and may not endure much longer. The old tree is of great girth, measuring more than 50 feet at 3 feet from the ground, and is probably the thickest Oak in the world. The young Oaks were raised from Acorns taken from the old tree by Mr. John Clayton, of Bradford, in 1893. The late Mr. Montagu, of Igmanthorpe, approved of this method of perpetuating the memory of the wonderful tree, and kindly agreed to it before his death. At the ceremony of planting the trees, there were present Mr. CLAYTON of Bradford, Messrs. FARRAH & MILLWARD of Harrogate, Mr. CASS of Cowthorpe, and others.

THE THERMOGRAPH at the BERLIN EXHIBITION.—In his prospectus, the exhibitor, Mr. OTTO BOHNE, Berlin, S. Prinsenzstr., 90, says:—"The thermograph is a new instrument, registering the changes of temperature. Its appliance in various kinds of business has proved most successful, being also adapted to secure a constant and sure control over the heating of stoves, &c., and to furnish proof of any negligence which may have occurred at any time." The instrument may be connected with an electric bell, so that when the temperature is reaching maximum or minimum an alarm will be caused, no matter how great the distance of the instrument. No doubt for scientific experiments it will prove to be of great value. Its cost is £8. *Bechnick.*

"COTTAGE GARDENING."—The ninth volume of this very inexpensive publication is before us. Each number costs but one halfpenny, and contains eighteen

or more columns, and two or three illustrations. It is published weekly by Messrs. CASSELL, and is edited by Mr. W. ROBINSON.

CYCLAMEN LATIFOLIUM (*persicum, Hort.*). On the 22nd of last month, M.M. VILMORIN ANSBREUX ET C^{IE}, are reported to have exhibited before the National Horticultural Society of France the wild form of *Cyclamen*, showing the degree of perfection attained in modern developments.

FLOWERS IN SEASON.—We have received several plants of *Myosotis alpestris gracilis* from Mr. F. C. HEINEMANN, seed-grower, Erfurt, Germany, a variety not much known in this country. The plant is of neat, dwarf, compact habit, well fitting it for market-work, dividing-lines and edgings to beds of other spring-flowering plants, table and room decorations, and other uses. The flowers are pale blue, small, and numerous produced. The plants sent had been lifted from the open ground, and potted, and sent off at once, travelling in capital condition to London.

THE ROYAL CALEDONIAN HORTICULTURAL SOCIETY has resolved to celebrate the Diamond Jubilee year in several ways in connection with its autumn show to be held on September 8 and 9 next. In the class for the most tastefully-decorated table of desert fruit, a Veitch Memorial Medal will accompany the first prize of twenty guineas, and the second and third prizes will each include a Victoria Jubilee Medal. Similar Medals will be awarded with the prizes for the best groups of miscellaneous plants arranged for effect, the money prizes being exactly similar in value to those in the fruit classes. The exhibitor of the best-arranged table of various cut flowers will be awarded ten guineas and a Jubilee Medal; and the second and third prizes will also include such medals, but of differing value. A class in the vegetable section will be distinguished in precisely a similar manner. Furthermore, the Council has decided that after the expenses of the show have been defrayed, the surplus funds shall be devoted to charitable purposes directly connected with horticulture. We anticipate the show will be a very fine one.

THE ALPINE-HOUSE at Kew is now full of beautiful and interesting plants from the Falkland Islands, as well as from regions nearer home, such as *Geum parviflorum*, a little gem, with prostrate habit, small circular rugose leaves, and pure white flowers; *Oxalis enneaphylla*, from the same region, with nine glaucous leaflets folding one over the other, and relatively large white flowers, is very attractive; *Ranunculus trilobus*, various *Androsaces*, *Ranunculus*, *Haberlea*, *Rhodopepis*, *Cassiope fastigiata*, *Campanula thrysoidea*, *Arum albatipatum*, and various *Saxifrage*s are among the plants we noticed in a hurried walk through. We strongly advise plant-lovers to pay an early visit.

THE QUEEN'S REIGN.—Mr. HENRY RUMSEY CANNELL, M.S.A., is to give a lecture, exhibiting tinder-box, flint, and steel, showing the old-fashioned mode of producing fire, explaining numerous alterations and events that have occurred; also the rise and progress of the people, and of the country. The proceeds are to be handed over to the Royal Gardeners' Orphan Fund, of which H.R.H. the Princess of WALES is a patroness, his Grace the Duke of BEDFORD President, and Mr. H. CANNELL one of the founders. Seventy children are at this moment receiving 6s. per week from the Association. Tickets, 6d., 3d., and 1d. each.

ORCHIS MORIO.—Mr. ENOLEHEART writes:—"I send you a small gathering of *Orchis morio*, that you may see how very pretty it is in some of its varieties. The pure white is fairly common in our pastures, the decidedly pink less so. It is curious that out of a very large number of spikes which I gathered over a considerable stretch of ground on Sunday last, every one had the pollinia of all its flowers intact, even spikes somewhat on the wane. The pollinia which are wanting in the flowers now sent have been withdrawn by myself. Has the moth or other insect which commonly fertilises this *Orchis* failed to appear here this season? The

weather has been sunny by day, and sufficiently warm at night to keep insects on the wing. In withdrawing the pollinia of *O. morio* by a sharp pencil thrust into the flower, I observe that their subsequent depression is less than in the case of *O. mascula*, if Darwin's drawing is accurate (*Fertilisation of Orchids*, p. 15), i.e., that they remain at a greater angle to the horizon. This means, I suppose, that the stigma of *O. morio* is higher above the head of an insect entering the flower than it is in *O. mascula*."

THE SOUTH AFRICAN FLORA.—A gentleman in the Cape Colony writes to tell me he is able to furnish me with seeds of every South African species, and will send me twenty packages of seeds every week. I beg to invite all interested in the very important, enormous, and most beautiful flora of South Africa to communicate with me on the subject immediately after reading this. *M. Buisson, Middlebury, Holland.*

DICTIONNAIRE ICONOGRAPHIQUE DES ORCHIDÉES.—A new issue of these useful illustrations of Orchids, accompanied by the little *Chronique Orchidicenne*, has reached us, and found to be of equal importance to its predecessors. The genus *Coleogyne* is commenced by the usual scientific description and table of essential characters, and plates of *C. cristata* and *C. cristata alba* given. Most of the other species illustrated are of the ordinary showy kind, the only one specially interesting botanically being *Lycaste l. siglossa*, a species not often seen in gardens. The others well illustrated are *Odontoglossum Rosii majus* and its variety *rufescens*; *Catleya Trianae* and its variety *alba*; *Dendrobium Warlianum*, and *D. W. album*; *Cypripedium Godseffianum* var. *Jupites*; and *C. Spicerianum* and *C. S. magnificum*, neither of which by the way can the artist be accused of having "overdone."

SPRING-GARDENING AT BELVOIR CASTLE.

The woods around this famous place were fast putting on their spring mantle of greenery, and the beautiful gardens, unique of their kind in Great Britain, were looking their best, when after a lapse of eleven years we again visited it.

The good guiding-spirit of the place, and part-caretaker of the woodland-gardens, William Ingram is, alas! no more, and another gardener has taken up his onerous duties.

If to Ingram much of the initiative in regard to the improvements at Belvoir is justly due, we must concede to the present head-gardener, Mr. W. H. Divers, the carrying out of much needed improvements in the management of the gardens, the vineries, pits, and plant-houses, a greater regard to cleanliness and orderliness, matters of first-class importance in any garden, and especially so at Belvoir. Unfortunately the pressure of the times is felt by Duke and peasant alike, and the inevitable reduction in the garden-staff has taken place here; still, it is at the present unaccompanied by any visible effect in the upkeep of the garden.

The Vines, which had been starved at the root, and unskillfully treated at the top, have much improved, although their great age might have tempted many a gardener to clear them out, and plant new ones in new borders, so generally unsatisfactory being the attempts made to put new life and vigour into almost dry bones.

There is, fortunately or unfortunately, as may be, a reverence at Belvoir for the antique, which extends to many things besides gardens and gardening, and the present Duke of Rutland being in favour of the retention of the old gnarled Vines, they are making fairly strong wood, substantial leaves, and snappy bunches of medium size in all of the vineries. Mr. Divers, in improving the Vines, has relied upon frequent dressings of artificial manure, the securing of good drainage and applications of rich pasture loam and crushed bones. Very early Grapes are not wanted, so that the Vines are not distressed by hard forcing.

The area of 7 acres forming the vegetable garden was dug or trenched in every part, and numerous new beds were becoming visible, and old ones in process of being cleared out of the land. This vegetable-garden, with its unusually high wall, rounded angles, and ornamental entrances, is, as all visitors to Belvoir know, a fine feature of the place. The walks, or rather roads, are of great width, the central one being not less than 20 feet, the side ones 12 feet. All are edged with Box, the formidable task of relaying which was recently completed.

Fruit trees of various kinds, dimensions, and ages, clothe the walls in faultless examples, of which, with the exception of young ones of recent planting, were loaded with bloom in the case of the Pears, and with fruits in that of the stone-fruits. It is a work requiring much labour to cover and uncover daily the great area of wall planted with such kinds as need protection in the spring, and a simple plan is adopted, namely, to fasten "Frigi Domo" or close netting to the top of the wall, then place smooth quarterings under the coping and extending some 4 feet from the base, and sufficiently close together to prevent the material touching the face of the wall. The curtain is lowered and raised in great lengths by a man or two working from a ladder at the opposite side, or standing on the wide coping of the wall, and secured when not in use at the top—no rollers, rings, cords, and pulleys being employed.

In consequence of the great number of spring-flowering plants employed in the various parterres round the castle, and the necessity of having two-year-old plants in the case of *Polyanthuses*, *Alyssum maritimum*, *Arabis sempervivans*, *Heuchera sanguinea*, &c., and of dividing and planting out many other species to grow into serviceable stock for putting in the beds in the autumn, a considerable area of the vegetable garden is occupied with these spring-borders. An acre or more immediately in front of the vineries in this garden is likewise planted with perennials and bulbs, and the collection is particularly rich in species and varieties. These plants are arranged in long oblong beds, with Box edgings, and narrow walks of gravel between. Immense lots of Narcissus and Violets are grown, the former for cutting and planting in the grass and the beds, and the latter for putting in the beds only. Those who have visited Belvoir may skip the next few sentences.

The site of the present structure on the top of an abrupt hill, once difficult of access on all sides, but now connected with the range of hills of which it formed an outlying spur by a wide and naturally-erected embankment, is about 470 feet above sea-level, and 250 feet above the level of the kitchen garden. From the terraces and windows of the castle beautiful and very extensive views, north and eastward—so far, indeed, as Lincoln and Newark, are obtained. From the earliest times it was selected as a place of strength, British, Roman, Saxon, and Norman having held it in turn as a fortified position, dominating a wide stretch of fertile country; and during the civil war, being held for the king, it withstood a siege of some duration, and only capitulated on being bombarded by a mortar brought for the purpose from Reading by the parliamentary troops.

On the north-east the ground is very steep, but it has been rendered easy of management as grass land by three wide and bare terraces; and on other sides also, excepting that those are furnished with narrow winding walks and ancient specimens of Oak, that we had well here on the tenuous nearly soil, common Yew, Portugal Laurel, and a wealth of exotic flowering shrubs.

Nothing that is ancient is to be found on the exterior of the castle, and inside there is but little, if we except a portion of the cellars. The present structure dates from the second decade of the present century, and was greatly injured by fire in 1816 when approaching completion, many valuable early salt, common Yew, Portugal Laurel, and a wealth of exotic flowering shrubs.

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edging 1 foot high and broad, the middle of which had been cut out, thus forming as it were, a double line. The reason for this being done by Ingram might be found in the death of the central portion from old age. The position is a warm one, and vegetation was very forward, Roses of various kinds being already in flower, and a couple of big specimens of *Magnolia Solanagena* formed shoots of white and lilac-colored flowers.

Amongst others on the higher wall of the bastion the following were remarked:—Several Figs, *Rosa Banksii*, which blooms abundantly, and is never cut by frost; *R. simplicifolia*, *R. Gloire de Dijon*, *Catherine Mermet*, *Marshall*, *Niel*, *Homer*, and others; besides *Chimonanthus fragrans*, of whose blossoms fill the air with fragrance in late winter; *As. Jasmines*, *J. nudiflorum*, flowering for the second time this year; *Lonicera Standishii*, with flowers deliciously fragrant for a great part of the year, never producing many blossoms, however, open at any one time; the highly ornamental Californian *Myrsine*, *Photinia arbutifolia*, the young leaves and shoots of which are of a rich reddish-brown at this season, and the flowers white, coming in panicles; *Crataegus pyracantha*; *Ilex* in much variety; *Clematis*; *Osmorhiza* in variety, including the hardy *C. aurea*; *Pyrus coccinea*, and others; *Mulberry* *confusa*, a graceful, dwarfed, creeping plant with orbicular leaves, the stems of leafy stems; and *Arava microphylla*, an excellent plant for clothing a wall with bright shining green foliage.

On the slope of the foot of the outer wall of this outwork of the castle there grow, in the shelter of Big Yew trees, a rounded specimen of *Chamaecyparis*, the next one, three of the Spanish *Wig* about 1 foot wide and 2 feet high, and a small plant of the *Wig-bush* *Rhus Cotinus*.

By following the walk at the foot of this slope the towering side of the castle comes into view, and turning to the left, the end of the walk we are all at once brought up by the castle garden. This small parterre, the first reached by anyone coming from the castle at this point, consists of a number of irregular-shaped beds, and some of regular geometric outline, a few of which are planted similarly in pairs. We note the contents of some of these beds as they now and will continue to appear for the first time longer. The beds, although differing in the kinds of plants, the varieties of plants used to fill them, rely chiefly for effect on various *Aubrietias*, *Alyssum saxatile*, *Saxifraga muscoides* var. *atropurpurea*, *Tilips*, *Pansies*, and *Primula polyanthus*. A big oval bed was planted with the rich-coloured *Aubrietia* *Leichtlinii* as an edging one foot wide, the next one being Veitch's strain of *Primula polyanthus*, followed by a row of *Tulip Keizer's Kroon*, intermixed with *Megasea cordifolia* *purpurea*, and the central area with some dark red-brown kind of *Wallflower*. As an example of another kind of planting, a small oval with high sides (2 feet high) was planted with *Primula polyanthus*, the next one the white variety of *Myosotis disitiflora*—a capital subject where a low white-flowered plant is a desideratum; then a row of the dark purple coloured self-Pansy *Admiration*, then double red and yellow *Tulips*, and behind these came *Saxifraga crassifolia* behind all the above, bordering of *Euonymus radicans* variegata, the central space being filled with what should have been the true Belvoir yellow *Wallflower*. A circular bed at one of the corners of this parterre contained *Myosotis alpestris* *Victoria* (which is a variety that flowers later than *alpestris*) intermixed with some of the yellow-flowered *Tulips* bounded by a row of *Primula polyanthus* and yellow *Pansies*, an edging 1 foot wide of *Aubrietia græca* giving the desired finish to the whole.

The beds we most admired were two of a star shape, planted with *Phlox annua*, dotted over with white *Tulips*, bounded by a broad row of Gilbert's *Harbinger* *Polyanthus*, creamy white, with a yellow eye, and very early to flower; then came *Pansy* *Admiration*, followed by an *Aubrietia*, and lastly a row of a red *Daisy*.

As a variation of this design were two stars, in which the pretty, fragrant, pale blue, self-coloured *Phlox divaricata*, the *P. canadensis* of some, with *Verallia* *brilliant* *Tulips* intermixed, occupied the central area, follow by *Primula polyanthus* in a mixture of colours; then came *Skyrlark* *Pansy*, a free-flowering variety, white with a blue edge, and lastly *Aubrietia* *Leichtlinii*.

A much-raised bed, with the sides faced with Ivy, was planted with *Skyrlark* and *Chloeden Purple Pansies*. These raised beds are the least pleasing, presenting, as they do, a unwholesome appearance, with but little elegance, their height being out of proportion to the width. The parterre was bounded on the upper side by a crescent-shaped bed of large size, which was planted with *Phlox annua* flowers from the earliest part of the year; and we noted *Franchis* *hyemalis*, the leaves now dying down; *Blossum Daffodi*, *Megasea ligulata*, the earliest species to express; *Myosotis*, *Arabis*, and *Boreocnemis plantaginifera* excelsum in bloom at the present time. In the summer time *Hornem elegans* and *Prunella* *brilliant* bedding plants continue the show. The late-flowering *Arduell Gem Pansy*, together with single-flowered *Tulips*, made a nice display.

One of *Leichtlinii* *Aubrietias* named *Ingrami* is a fine acquisition, the colour a bright rose-purple, and the flowers of nearly the size of *Victoria*. This fine variety, mixed with *Royal Standard* *Tulips*, had a rich effect. *Verallia* *brilliant* *Tulip*, set out on a groundwork of the *Harbinger* *Polyanthus*, was permissible, but rather bizarre. *Phlox divaricata* and *Tulip* *Coeur de Cardinal* will not do, the latter scarcely to take notice of, the colour out of the former. A second row to take notice of, the colour out of the former. A hardy, deciduous half tree, with white flowers, was a prominent object in the castle garden, and a hedge of *Kerria japonica*, an old-fashioned plant seldom given the position it

deserves in a garden, shut off the garden from an adjacent walk.

The Statuary Garden is situated on a lower level than the one from which we have just departed, and derives its name from some statuary representing the seasons, dating from the days of Queen Anne. To the right on looking down into this miniature garden is a fine specimen 70 feet high of *Abies pectinata* (Silver Fir). The pines, lying deep down amongst tall trees, consist of a series of steps, the upper one formed of small oval beds filled with purple Pansies, red Tulips, Aubrietias, with Daisies forming the lines of division. The middle step consists of beds of white and blue flowered *Myosotis* mixed with yellow Wallflowers; and the beds on the lowest step are planted wholly with Wallflowers. The prevailing tint is white, and the effect in early morning or late evening very charming.

The Duchess's Garden, the one most remote from the castle, being about ten minutes' walk from the last, is situated in a curve of the hillside, and about half way down the declivity, with a rich foreground of woodland at a distance of 100 yards, and a precipitous bank at the rear, the middle distance being furnished with a rather intricate mass of flowering shrubs, slender Conifers, Birches, &c. It is very charming, unique of its kind, and almost unimitable, falling similar surroundings.

A walk skirts the uppermost series of beds, another running lengthwise at a lower level. A plan of this garden is given in the *Gardener's Chronicle* for April 10, 1880, p. 457, and we do not remark any alteration having been made in it since that time, the mode of planting the beds presenting very similar features. The newness of the surroundings, due to extensive felling, have wholly disappeared, and the exotic and native shrubs are still standing in the most, sheltered hollow. As in the other gardens, the prevailing tints are the blue and purple, obtained by using extensively *Phlox divaricata*, *Aubrietias*, and *Pansies*. Wallflowers are used to impart lightness. A square bed, cut into four triangles by a cross, having a circle in the middle, the circle, the stem of an iris, and a cutting that the areas are of equal length, was pretty. The filling of the triangles consisted of *Phlox divaricata*, *Aubrietia*, and red and white Daisies, with margins of golden *Pyrethrum* and *Arabis*.

The largest bed on this bank is planted in white lines of considerable length with the white *Myosotis*, *Alyssum saxatile*, white *Pansies*, yellow *Polyanthus*, *Phlox*, *anemone* and *divaricata*, and *Sylkary* *Pansy*.

The lowermost series of beds are planted in similar way lines with *Myosotis alpestris* Victoria, a neat habited, small-flowered variety, and a white form of it, a great similarity in the style of planting followed in the castle garden being remarked.

A pretty feature noticed in the Duchess's Garden was a horse-shoe-shaped bed filled with yellow Wallflowers, and edged all round with *Myosotis alpestris*. Amongst plants that have become naturalised in this part of the grounds requiring merely to be kept free of their enemies in the gardening, the everywhere present *Goutweed*, are *Anemone nemorosa* flore-pleno, and *A. Robinsoniana*, the first with white, and the second with light blue-coloured double flowers. *Heuchera sanguinea* continues to be used for its broad bronzy-green leaves and light scarlet flowers, but not so largely as formerly. Several square patches of *Tussilago fragrans* now in full leaf must have pervaded the air heralding with the perfume of its blossoms early in the year.

Shrubs in flower at this point worthy of notice were *Azara microphylla*, just going over, the fragrance of the tiny blossoms being of the sweetest kind; *Androsideris chrysantha*, the orange-coloured flowers just opening; *Spiræa Dunbari*, a very fine seedling *Rhododendron* with hundreds of corymbs of rose-crimson blossoms; *R. Falconeri*, a big plant, was covered with heads of white blossoms, and a nightingale hid away among its branches was pouring forth floods of song.

Some large plants of *Camellias* were literally smothered with fresh as well as fading double, red blossoms. The beautiful scarlet flowered *Rhododendron Thomsoni*, which had been loaded with blossoms, was just going over. A large number of plants of *Saxifraga polifolia* are showing fair flower. *Halecia tetrapetala*, seldom observed of large size, forms here a bush of considerable dimensions, as does *Acer polymorphum*; and *Arundinaria falcata* and *Bambusa Metake* grow vigorously, and large examples of both exist hereabouts.

The rock garden, made on the hill-side at some little distance from this garden, and within view from it, is thickly planted with spring-flowering plants, *Ferns*, *Bulbs*, &c. *Vesicaria articulata*, very early in bloom and very free, and 2 feet in height; and *Veronica rupestris*, excellent for clothing rocks, were remarked, the latter not yet in flower. Presently, all the above plants must be being cleared away, and its places occupied by the gaudier, and certainly less pleasing, flowering plants of summer. We had looked on the scene late in the day, when the sun was setting, and lengthening shadows fell across the glen; in the early morning, when the sun's rays glistened on flower and leaf, wet with dew, and at mid-day, but of all hours, give us those of early morning for viewing the spring flower-garden of Belvoir Castle.

HOME CORRESPONDENCE.

THE RENAISSANCE OF THE HOLLYHOCK.—I am surprised that "D. T. F." should agree with me on so many points, and then put himself to so much

trouble to differ with me on one on which he seems a little rusty: namely, the raising of Hollyhocks from seed in Scotland. "D. T. F.'s" advice as to the treatment of seedling Hollyhocks may do well enough in the south of England. But when he comes to some of the coldest quarters of Scotland, where there are only from six to eight weeks clear of frost out of the fifty-two, and the thermometer goes down from 8° to 10° below 32°, Fahrenheit, almost every spring, he would find that seed sown in the open air in March or April would only produce small plants, and so weakly that they could hardly be expected to stand a severe winter. I have tried both ways, and have come to the conclusion that the best time to sow seed is March, and in heat, and work on as formerly advised. I have hitherto practised with success what I preach. "D. T. F." seems to put great faith in Mr. Forbes' collection, and his methods of propagation. It would be interesting to know whether the cuttings are struck in heat, or out in the open air, and whether the budding and grafting are done out in the open air or not. From what I know of the climate about Hawick, I hardly think they are. Another thing in favour of seedlings is, that those who cannot afford to pay such large prices as are usually asked can, for a nominal sum, work themselves into a good strain of healthy plants. "D. T. F." seems to take objection to the Spruce *Frit* branches as protection during winter. I should hardly think it necessary to remind him that prevention is better than cure. D. L. M.

FRUIT PROSPECTS.—All kind of fruit-trees, with the exception of Damsons, and one or two varieties of Plums, have been, or are still covered with blossom, and up to so late as May 10, the prospects of a good fruit season were very promising. Although one or two sharp frosts were experienced during April, very little damage appeared to have been done, with the exception of a few of the earlier bunches of Red and White Currants, on the most exposed branches of those bushes growing in the outside rows of the fruit-quarters, and these bunches were denuded of half their blossoms. During the last few days the weather has been such as to make the earlier rosy prospects extremely doubtful. On the morning of the 11th we registered 5° of frost; the afternoon previous we had a few falls of hail and rain, but with a good wind, the foliage and bloom were dry, or nearly so, before the frost commenced, therefore little or no damage was done; but during the evening of the 11th, it commenced to rain about 7, and continued until nearly 11. Almost immediately afterwards it began freezing, as by midnight the whole of the surface of the woodwork on garden-lights, &c., was coated with ice. Next morning we had registered 7° at 3 feet 6 inches from the ground. Of course it is early yet to speak with certainty as to the actual amount of damage the frost has done, but the Pears which were just setting appear to have suffered most, the ground underneath the trees being covered with the embryo fruits. The early blooms of the Strawberry have had their pistils blackened where unprotected. Wall trees, which have had their coverings removed, are well clothed with foliage, which has protected the young fruit to a great extent, and which appear to have escaped so far any serious damage. The larger trees growing in the orchard, and more especially Apples, were, previous to the 11th, literally covered with their bright showy blossoms, but these are now of a dull sickly colour. The smaller trees growing as pyramids or espaliers do not seem to have suffered so much, as their blossoms still retain their healthy appearance. One can only hope that from the abundance of the fruit-blossoms on most trees, sufficient may have escaped to produce a fair crop.

G. Woodgate, *Colleston Hall Gardens, Darton-on-Trent.*

FRUIT TREE GRAFTS FAILING TO GROW.—This season we find that the grafts on the Plum are doing very badly in this district [Northampton] owing, probably, to the harsh, drying winds that have prevailed. I have never seen the like before. Hundreds of grafts are quite shrivelled up. With showery weather some of these may come round, but it looks as if they should have almost a fair chance of all kinds. Will some of the readers of this note inform me if such a state of things is common this year? H. K.

COCKROACHES.—In consequence of a paragraph that appeared in Answers to Correspondents, I have received a large number of letters from your readers. My efforts at clearing cockroaches were

confined to the Sheffield Workhouses, where the pest swarmed, and I was quite successful in clearing it. I did not contemplate making my remedy public, but owing to the many requests made to me I have arranged to put it on sale, and can now be obtained from Mr. Hewitt, chemist, 66, Division Street, Sheffield; Messrs. Dunnill & Pater, chemists, Broomhill, Sheffield; and the Apothecaries Company, Virginia Street, Glasgow. All the time bear my signature across the label, and I guarantee the efficacy of the paste in clearing cockroaches. Particulars are given in your advertising columns, and I shall be greatly obliged if you will kindly insert this letter, as I believe it will benefit your readers, and greatly relieve my correspondence. E. Howarth, F.L.S., Sheffield.

PHORMIUM TENAX AND VARIETIES.—Mr. Pettigrew's experience with seedling variegated New Zealand Flax is the same as mine, that is, that when any variegated variety forms seed, it is rarely if ever that a variegated or white seedling can be got to live, which is because there is little healthy sap or chlorophyll in the leaves. Plants raised from seeds of the variegated variety will often come with leaves quite green, that is, like the true *tenax*, from which all have doubtless been derived. *Phormium tenax* var. *atropurpurea* will sometimes come true from seed, and many, although taken from the same seed-plot, will be the true *P. tenax*. I have planted clumps of *P. tenax variegata*, *Colensoi*, and *Veitchi*, but in course of time most of them reverted to the original species. *P. atropurpurea* is, I think, the handsomest variety. W. O. Fota, Cork.

CYTISUS PRÆCOX.—In your issue of May 8, you have a note on *Cytisus præcox* x, in which the writer expresses his ignorance of its origin. It may interest him and other readers to know that it was found among a bed of seedlings of *C. purgans*, some thirty years since, by my grandfather, the late George Wheeler, of the Warminster nurseries, and I have in my possession a photograph of the original shrub. I cordially agree with "W. J. B." that this distinct early and free-flowering variety deserves much more attention than it gets, as for the edges of shrubberies and large mixed borders applied to pasture object than a good specimen simply covered with blossom as it is in mid-April. H. J. Wheeler, *The Nurseries, Warminster.*

EELWORM IN PASTURES.—I was surprised to see on p. 323 of last week's *Gardener's Chronicle*, Mr. J. J. Willis writing to the effect that small doses of certain artificial manures applied to pastures formed a remedy against eelworm. Although Mr. Willis is a specialist on artificial manures, he has evidently had, if any, very little practical experience in destroying eelworm pests. No doubt this is a bold assertion, but nevertheless it is true, as may be seen by following closely what he has said on the above subject, p. 323. Mr. Willis first of all informs us that, "if the eelworm is in the pasture, the infested soil should not be used." I should like to ask your correspondent to what species of eelworm his indefinite remarks apply, and also why the turf should not be used? There are very many different kinds of eelworm found in England; some of them, however, do not attack or destroy any plants under the gardeners' care. If soil contained only harmless species of eelworm, why should it not be used for growing plants? A few of the harmful species are as follows: *Tylenchus devastatrix* (stem eelworm), which attacks Clover, Oaks, Potatoes, Onions, &c.; *T. obtusus* (stem and root eelworm), which attacks Vegetable Marrows, Carnations, Melons, Dracænas, &c.; *T. triticeus*, found in the roots of the Wheat-plant; and *Heterodera radicola* (root eelworm), which attacks Lettuce, Beans, Cucumbers, Tomatoes, &c. The last-named is the worst of all the eelworm pests, and if the turf were infested with this species, it ought not to be used for potting any kind of soft-wooded plants in unless the soil be previously disinfected. The other species named above are present in most turf-sole; indeed, we have never yet examined a soil which did not contain some eelworm. I have seen it stated in many text-books on agriculture that kainit, basic-slag, and other chemical manures would, if applied, eradicate eelworm from soils; but from many practical experiments carried out with the greatest care, I have found that ten times the amount advised by Mr. Willis and the text-books writers will not do so! Mr. Willis further tells us to take some of the infested turf, mix with it kainit and basic-slag, and watch the result. This is all very well from a scientist's point of view, but what practical gardeners want to know is how much kainit and basic slag to use per load of soil; and also

whether they (the manures) will kill the eelworm if used. When gardeners are compelled to use, they carry out the "watching for result" process without being told to do so; but Mr. Willis' advice would have been more valuable if he had first of all carried out the experiments and then given us the results. There is still another sentence on p. 323 to which I should like to make a few remarks. Mr. Willis says that, "a little sulphate of iron for watering will assist the plants in overcoming the eelworm attack." It might do so, but what quantity are we to use? Perhaps it may interest Mr. Willis to know that in one experiment 82 ozs. of sulphate of iron in 12 cwt. of infested soil, and in another 1 lb. of sulphate of iron in 100 lb. of infested soil, did not affect plants on a hill eelworm. Fearing I may be preaching on your valuable space, I will leave the remedies we have found successful until a future issue; but before closing I may say that water at 130° Fahr. will kill eelworm, and if turf infested with this pest be treated with scalding water it will prove a cheap and effectual remedy in destroying eelworm. A *Notice*.

DARWIN TULIPS.—There seems to be prevalent a notion that the section of late-flowering single Tulips having the above appellation is of the late Charles Darwin's raising. That is not so. The raiser was Mr. Krelago, the well-known bulb-grower, who, having evolved this beautiful section from out of others by interesting and hard selection, feeling that the section presented an admirable illustration of the progress of evolution, named them Darwin Tulips, in honour of the great apostle of evolution. The flowers of these Tulips have nothing in them that is quaint or singular, such as may be seen in the Parrot section; rather they are remarkable for fine retort form, and singularly beautiful colours in exceeding variety. Having already Van Thols, Dutch, English, Parrots, late, and numerous species, there can be no room for objection to the addition of yet a further section under the appellation of Darwin, and a section, too, that when well known promises to become most popular. *D.*

PREMATURELY-DUG BULBS.—In the few remarks you kindly published in the *Gardeners' Chronicle* of May 8, I endeavoured to explain how Mr. Jordan succeeded in conserving prematurely-dug bulbs in a manner at once simple, and devoid of much labour, and perfect as regards the means of retaining the names of the same. Though it is matter of notoriety how well gardening is carried out at Rocket's Park, I write in particular of the general excellence of the spring-flowering bulbs, and drew the inference that Mr. Jordan's new plan of treating his bulbs was a successful one. To whatever purpose the bulbs thus conserved are put, I am not able to state; suffice, that all that are there grows are worthy of admiration. Last week Mr. Jordan asked whether I intended to tell the readers of the note, in all sincerity, that the best beds were obtained by the method of defoliation I had described. My former communication entirely negatives such a supposition. Is it necessary for me again to inform your correspondent that I was dealing with bulbs prematurely dug up? Can your correspondent show, by any possible amount of word-twisting, how any bulbs so dug up can be used for filling the beds the next year in anywise to resemble those specially prepared for what he calls the "best beds"? As the subject will not bear discussion, the oft-quoted "grain of salt" is not in requisition. Happily, I only endeavoured to describe the method practised by Mr. Jordan. It is thought out and practised, and the method myself should have been the more prominently subjected to the charge of plagiarism which is made against everything new, or which traverse old methods and practices. As the subject of "barbarous defoliation" has been mooted, I think it should not be allowed to rest without a few more remarks, albeit only scientists and those versed in plant physiology are capable of dealing with it in all its bearings. I may, however, ask at what stage of growth or age of leaf does defoliation become "barbarous"? In other words, when do leaves cease to perform their necessary functions? I refer now to deciduous plants. An Apple-tree, for instance, forms its flower-buds prominently whilst the summer's leaves are perfect, and before any signs of fading or disease are observable; the Peach-tree has its leaves brushed off with a besom whilst they are perfectly green and apparently full of vigour as they ever were; Potatoes may be dug when full grown, even if the skin should peel off them with slight rubbing, and they will keep as well and prove so floury as those left in the ground until winter, notwithstanding the fact that the

haulm is perfectly green. Again, Onion-bulbs do not seem to enlarge in circumference after their tubular leaves cease to grow; Dahlias and Jerusalem Artichokes are all but suddenly cut down by frost when growing vigorously, yet they produce, nevertheless, perfect tubers, and have continued to do so through a long course of years, still maintaining vigorous health and a capacity for propagation for an indefinite time. And bulbous plants, when do they cease to receive assistance from the leaves? Tropical bulbous plants have to make their growth during a short rainy season, for once that is past, the tropical sun locks up all surface moisture wherein their shallow roots rest, then comes a sudden and intense aridity of the air and soil—yet these bulbous plants survive. When do Hyacinths and Narcissus leaves cease their office, obedient to the demands of the plants? Is it when growth, and with growth useful activity ceases, or do the leaves in decay feed the bulbs? When Mr. Jenkins can answer these questions, he will be in a better position to talk of barbarous defoliation. *William Earley.*

CATALPA BIGNONIODES.—Seeing in the *Gardeners' Chronicle* a record of an old Catalpa syriaca, and, judging from the photograph, I thought my tree far older than that shown, and far bigger in the timber. I give the dimensions below, but am afraid to say the age after the assertion that the tree represented, if not the first, was one of the first imported to this country:—Girth 3 feet 10 in. from ground, where it divides into three branches, 13 feet 10½ inches; girth 7 feet from ground, first branch, 6½ feet; second branch, 6 feet; third branch, 4 feet 4 inches. Spread, east to west, 55 feet; north to south, 47 feet 6 inches. Height, about 37 feet. *H. T. Pitt.*

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

MAY 11.—*Present:* Dr. M. T. Masters (in the chair); Mr. Douglas, Mr. McLaughlin, Rev. W. Wilks, Dr. Miller, Dr. Bonavia, Mr. A. Sutton, and Rev. G. Henslow, Hon. Sec.

Woolwin on Fruit Trees.—Mr. Hake, South, of Shrewsbury, forwarded some living specimens received by him from Mr. J. Jones, Chelmsick Pools, Church Stretton. They were described as attacking Plum and Apple grafts, Roses and Raspberry buds. They proved to be *Otiorrhynchus pipiens*. The trees and bushes might be sprayed, though a better plan is to shake the boughs over a large sheet of paper, in which they can be caught and then destroyed.

Birch Branch with Phytolacca.—Dr. Masters showed specimens illustrating the early stage of the attack on boughs by this insect. It is not often the commencement of the so-called "Witches' Brooms" can be detected as in this instance.

Abies bryonata.—He also exhibited sprays of this handsome tree from Tortworth, remarkable for the silvery undersurface of the leaves, which are about 3 inches in length. It is a native of S. California.

Abies Menziesii.—He also showed a branch of this splendid timber tree from Vancouver laden with Catkins, from Tortworth (East of Durd).

Featureless Apples.—Flowering-shoots of the Ekliville (Seedling) Apples were received, remarkable for having no petals. They were sent from the Glestown Gardens, Beas. There were 600 bushes of twelve years' growth, all being similarly affected. No particular cause could be ascertained.

Woolwin on Fruit Trees.—Dr. Masters read a single specimen of a flower of a *S. incomparabilis*, of a somewhat novel character. The perianths consisted of twelve pieces regularly arranged in "threes." The short cup-shaped corolla, as well as the stamens, were totally absent; but the styles above the tube were free and petaloid, suggesting the normal condition in an *Erica*.

Selenites (2)—Mr. M. Taylor, of The Gardens, Pembidw Hall, Nanerch, sent some remarkable specimens of a fungus, consisting of large branching lumps, which appeared in a Mushroom-bed. They were forwarded to Kew for investigation.

Method of Grafting.—Mr. ROBERT SMITH, of Bradwell Villas, Bishop Street, Shrewbury, sent a number of specimens of grafts, illustrating a new method. This being, that in preparing the scion, while one "tongue" is inserted as usual, the opposite half of the scion is carried over the flat top of the "crown," and inserted on the opposite side, or two grafts may be thus inserted on opposite sides of the stem, the result being, as shown in the specimens sent, that the summit is completely covered in with new growth. This was seen in small specimens of whip-grafting, but none were sent to show how far large ones would be covered over. Another advantage arose from the new method of preventing loss of grafts by wind breakage, for it thus gave a better and stronger union. It was thought by Mr. Douglas that it was a decided improvement upon the old method, as long as the scion and stock were of the same size; but further information was desirable as to the success

when the surface of the stock neck exceeded that of the scion. See *Gardeners' Chronicle*, 1874, vol. ii, p. 359.

Double White Auricula.—Mr. R. DEAS sent a plant which was the result of fifteen years' selection from a single white variety; the petals were not of a pure white, but slightly yellowish-green tint.

THE TULIP CONFERENCE AT REGENT'S PARK.

At the Conference held on the 12th inst., in connection with the exhibition of Tulips, which was reported in these columns last week, there were read the following three papers:—1, "The History of the Tulip," by Mr. J. W. BENTLEY; 2, "The Hybridisation of Tulips, and Raising of Seedlings," by the Rev. F. D. HORNER; and 3, "The Cultivation of the Tulip," by Mr. C. W. BENTLEY. The meeting was held in the Museum, and the attendance was less than two scores. The chair was taken by Mr. JEO. WILSON, who, opening the proceedings, addressed to the audience a few words of encouragement in their efforts to popularise in the Southern Counties the culture and love of Tulips as they are regarded by the florists. He spoke of certain indications of a re-assuring kind that he had observed, and incidentally mentioned that the late Dr. Hogg, who had acquired a considerable collection of Tulips, had once given the sum of £20 for a single bulb.

THE HISTORY OF THE TULIP.

Mr. J. W. BENTLEY, Hon. Sec. of the National Tulip Society, and an authority upon the history of the florists' Tulips, gave a brief discourse upon their history since, in 1559, they were cultivated in Augsburg, according to Gesner, which memory has been perpetuated by the Tulips Geneeriana. The regard held by the Turks for the Tulip no doubt existed for years before the love or knowledge of them travelled westward. In 1577 Tulips had reached England, and little time elapsed before the English florists had raised many seedlings of their own characteristics. In 1638, the Parkman was familiar with 174 varieties, and in 1663, in Mr. Ray's catalogue there were 184, whilst in a subsequent edition there were 300 recorded. The Tulip mania, with which everyone is more or less familiar, was passed by the lecturer in a few words, it was merely a form of gambling. Early in the eighteenth century, viz. 1710, *The Tulip* rendered ridicule at the Tulip raisers, on account of the excessively long names given by them to the varieties, and the same paper quoted a declaration by a florist to the effect that his bed of Tulips was of more value than 100 acres of the best land in the country. Many of the British Tulips were thought by Mr. Bentley to have been French seedlings, but the French were so frequently enrolled in warlike proceedings, that the cultivation of them was more common in Holland.

At the commencement of the present century, Tulips were cultivated in considerable quantities, and many of them were Dutch varieties; but immediately after this time the British raisers bestirred themselves, and in 1820 the position of British Tulips was assured. Until years later, the southern had the business in their own hands, but after 1840 the midlands caught up the declining interest in the south. Since then the business has been more and more lessened, and what interest has survived has gone north. There was little seed saving and Tulip raising carried out at the present time, but the work is still practised by the Rev. F. D. HORNER, and by Mr. Jas. THURSTON, Cannock, Staffordshire. One of the objects of the conference was to stimulate an interest in the cultivation of Tulips in the south, and he hoped it would be successful. The English florists' Tulips were later in flowering, larger, and of better form than Dutch sorts. The flower-stem should be sufficiently strong to support the flower erect. The six segments should be broad, rounded, equal in size and shape, that when expanded would form half of a hollow cup. The florists' regulations as to colour were next given. The base should be pure white or yellow, stamens pure as base, and anthers bold and black (see report of the show in last issue, p. 337).

The characteristics of the rose, and of hybridisers were then briefly discussed. The bizarres have a yellow ground, with brown or blackish markings, and are very vigorous. Roses and hybridisers have a yellow ground, but in the former case the markings are of rose, red, or crimson, and in the latter of purple, black, or violet. The seedling form of the flower before it is "bred" or "is rectified" is known as "breeder." After it has broken into feather or flame it is rectified, and is a flamed or feathered rose, bizarre, or hybridiser, as the case may be. The differences between the branched flame and the marginal feather colour on the segment is well known. Mr. Bentley was unable to suggest any explanation of the reason for Tulips being "rectified," except that it was evidently a step in their maturation or history. Rectified varieties could be propagated truly by offsets. A good strain was necessary, even in the case of good varieties, for these differed much. The best flowers as breeders were often found in rectification, a variety of poor colour when a breeder often makes a desirable rectified variety. Seldom was a variety good in all three classes, but this was the case in Sir J. Paxton, either as feathered, flamed, or breeder. Dr. Hardy and Modesty were good in two, and Glory of Skilken in three. The rectified variety of the rose, the Tulips were very inconsistent, one year flamed, another feathered. So that the grower had experience of various kinds; indeed, it was this excession of anticipation, disappointment, and unexpected delight that made the study and culture of Tulips a never-failing source of interest and pleasure.

THE CULTIVATION OF THE TULIP.

Mr. C. W. NEEDHAM, Hon. Treasurer of the National Tulip Society, commenced his practical paper by remarking that in almost all descriptions of soil and locality the Tulip would exist and produce a floral display, but in order to obtain perfect flowers, the plants needed careful cultivation and a particular attention to small details. The position of the beds should be sheltered a little from the east and north. The beds should be 4 feet wide, well drained, and raised 6 or 8 inches above the level of the ground. If not well drained naturally, it would be well to take away the soil to a depth of 2 feet and put in a layer of rough rubble and a drainage pipe to be covered with one inch of soil. This will conduct any surplus water some distance away. Ordinary well manured soil from the kitchen garden was an excellent medium for the bulbs to grow in, and it should be porous rather than stiff. Old turf that has been stacked a twelvemonth was also specially suitable when available. The bulbs should be put in rows across the bed about 6 inches distant each way; or if the object was to provide a floral display only, they might be planted at distances of 4½ inches. If the varieties were similar, two bulbs might be placed in a hole. When the bed is finished, the bulbs should be covered to a depth of 4 inches. If it is necessary to add manure, it is best applied as a top-dressing, using thoroughly well-decomposed manure for the purpose. It is an advantage to change the soil each season where this is practicable, and would that had been richly manured for a preceding crop is best, as it would require no additional manure at time of planting. If a little stimulant is required, moderate applications of nitrates, superphosphate of lime or kainit are best. In order to obtain pure, perfect blooms for exhibition, some growers found it to be an advantage to grow the bulbs alternately strong and weak. Every other year they would be cultivated in what is termed a "fat bed." Grass-feeding was certain to tend to coarseness in growth and in flower. The old growers used to talk of "slaving their flowers into purity."

The correct time to lift the bulbs was when the stem was drooping, and would bend double without breaking. Great care was necessary to ensure that the bulbs were dried in a dry cool place. On no account should the bulb be allowed to be burned by the sun. Enthusiasts would require boxes with divisions at some distance apart, in the order the bulb were planted in the bed, so that when the boxes were full the bulbs would be placed exactly as before lifted. In any case, it would be necessary to take care they were stored in a suitable position, and in such a manner that their temperature was not disarranged, and their identity thereby lost. The Tulip-grower required a book, in which he would enter the characteristics each variety displayed, with such observations upon them as circumstances suggested. At the end of the season, the collection would be weeded out according to the register in the book.

The chief source of injuries to Tulips whilst growing was bulbrot, and bright sun succeeding frost. If the flowers were desired without blemish, it would be necessary to protect them by blinds of stiff tiffany or netting, which should be drawn across the beds immediately above the plants. It was a critical time for the Tulip when the bud was just above the ground—it was often ruptured by frost at that period. Exhibitors frequently protected their Tulips by movable frames, that could be placed over them at critical periods, and removed for different purposes at other times.

HYBRIDISATION AND RAISING OF SEEDLING.

A very interesting paper by the Rev. F. D. HORNER upon this subject was read by Mr. BENTLEY. The reverend gentleman commenced by insisting upon the condition necessary in the hybridisation of any plant with a view to obtaining improved progeny, viz., that of parentage. In the selection of parents, much thought and care were essential. The hybridist need not be careful to select "rectified" varieties only, as breeders were just as good, and, indeed breeders generally carried more seed than a rectified variety.

Then Mr. Horner enumerated the characteristics desirable in a good Tulip. Form and colouring were such necessary considerations, and neither need be given the precedence over the other, but there was further room for improvement in form, such as in perfecting the roundness of the cup, increasing the shoulder, and the breadth of the segments, as well as clearing the ground colour, and in improving the markings.

In order to accentuate the class distinctions in the florists' flowers, it was essential to use only pure blood, i.e., to cross bizzares with bizzares, roses with roses, &c., otherwise flowers with indefinite and undesirable markings would result. Before any flower is fertilised, it was necessary to see that the stamens of the same condition, and that they should be guarded by a shield of cotton-wool, as well from the pollen of the same flower as from that of others that might be conveyed by bees, &c. This shield would have to be removed when cross-fertilisation was to be effected, and this, over the stigma might be again guarded with a shield of cotton-wool. The shield would not be removed until immediately after fertilisation had occurred, as was the case in many flowers; but when they have dropped, it was advisable to cut off that part of the pistil above the seed pod, to prevent water from lodging, and thus causing decay. The seed-pod would swell rapidly during June and July, and when in August at the time the bulbs are usually lifted, the new bulb attached to a plant that has been cross-fertilised may be detached and lifted, and rested as ordinary ones. It has borne no part in the development of flower or seed. The seeds are best sown as soon as ripe, or early in September, in boxes or pans, under glass, if preferred, or in

the open air, covering them about a quarter of an inch deep. If the seed is not sown until February, the seedlings will be up in May. They first appear similarly to an Onion, with one leaf only, and though increasing each year in size, as the bulb increases also, one leaf only will be produced until the bulb has reached its stage to flower, which will vary from four to seven or eight years, according to whether the bulb produces a "dropper bulb" or not after the fourth year (see fig. 117). If it produced a "dropper bulb" the flowering stage is considerably delayed. Seedlings should be selected as soon as possible, though it was not always advisable to pass final judgment upon a variety for the first few years. All seedlings exhibiting poor form in the flowers should be destroyed before they have become "rectified." Had this been strictly done in earlier years, there would now be fewer flimsy and feathered varieties with attenuated petals, possessing little to recommend them, except satisfactory markings. Generally, the bizzares showed the greatest development at present in form and markings.

in the season his Saapdragons (*Autirrhinum*) were attacked by a disease caused apparently by the same fungus (?)

Mr. KRELAEGE, Haarlem, remarked that in Holland the fungus disease had been observed, and that it was shortly to form the subject of a scientific enquiry, but in the meantime cultivators were of opinion that it was the result of a soil possessing an insufficient quantity of calcium or lime.

Mr. H. DEAN said that in Bedford, Middlesex, he had been unable to grow certain plants owing to fungus attacks, and it appeared that the soil grown in there was something that tended to produce a disease in Sweet Williams, for they would not succeed there.

Mr. CHATER thought that the trouble was resultant from damage only.

The CHAIRMAN said that it appeared to be the same in the case of this Tulip disease as they had found it in many others. The best thing to do was to make the culture as perfect as possible, to keep the plants in such perfect health that the spores of a deleterious fungus could not affect them.

Mr. BARR subsequently differed from Mr. Needham in the necessary distances that the bulbs should be placed in the beds, or 4 inches apart was quite sufficient, and the leaves then served to protect the plants in some measure from hail and other injury. At Long Ditton the best results had followed moderately close planting.

Mr. CHATER was of the same opinion as Mr. Needham, and favoured more space.

A question was asked as to whether it was not possible to give some explanation of the change described as "rectification," but beyond the statement that the "brooder" stage was an immature form, none was given of the cause of the change—there was not even an intelligent theory. Mr. R. DEAN asked Mr. Bentley if he had ever known of a "rectified" flower reverting to the "brooder" form, and in reply the latter gentleman stated that they so far lost their character that the basic colour changed and was diffused, but that in all cases he had observed the father or flane could still be seen, and the deterioration was due to gross feeding. Mr. DEAN said his own experience had been similar.

Mr. Krelage having been asked to explain the meaning of the word "byblenem," said that in England the meaning of the word was imperfectly known. "Byblenem" was plural and meant several, the singular being "Byblenem." It was difficult to explain the meaning of the word, but literally it was "second section or class." Its meaning was contrary to "first," and he supposed that at some time this class was considered a second section or class. Asked by Mr. DEAN if in Holland the Tulip bulbs were accustomed to grow "droppers" (see fig. 117), Mr. Krelage said that botanical species occasionally did so. Such varieties as were in the habit of producing them were planted over a hard bottom of stones. The florists' Tulip seldom "dropped."

Votes of thanks to the Chairman and Essayists concluded the proceedings.

CAMBRIDGE PHILOSOPHICAL.

At a meeting held on Monday, May 10, 1897, Professor LEVING, Vice-President, in the chair, the following communications were made to the Society:—

1. "Observations on Stomata by a New Method," by Mr. FRANCIS DAWSON (President).

The method consists in the use of "Chinese sensitive-leaf," i.e., thin sheets of horn treated in a special manner. When a strip of this substance is placed on the stomatal surface of a leaf, it gives evidence of the condition of the stomata by its movement. If they are open, it curves away from the source of moisture; if shut, it remains stationary. By means of a simple apparatus, the degree of curvature of the horn is recorded. All the ordinary experiments with stomata can be easily and rapidly shown with a hygroscopic of this sort.

By taking readings at regular intervals the diurnal course of the stomata can be studied; it was shown that it has been shown that the nocturnal closure of the stomata is a periodic phenomenon like the "sleep" of leaves.

A number of observations were made on the effects of the withering of leaves on the stomata; it was shown that while the stomata of certain species simply close as the leaf withers, in others the first effect is a well-marked opening. This fact is of importance in connection with the theory of the stomata, since it indicates the share which the pressure of the surrounding epidermic cells has on the guard-cells.

It was shown that many plants open their stomata in long-continued darkness; this fact bears on the mode of action of the guard-cells, since it shows that they do not (as is often asserted) lose their turgescence when the assimilation of CO₂ is prevented.

II. By Mr. BATESON: "Notes on Hybrid Cicadas, produced by Mr. Lynch and Miss Pertz."

It is stated by many writers that the garden *Heritiera* arose as the hybrid offspring of several species of *Senecio* from the Canary Islands. This statement has been questioned by Mr. Thibault Dyer on various grounds. The author exhibited hybrids raised from *S. cruentus*, *S. multiflorus*, and *S. Heritieri* (—lanatus) raised in the Cambridge Botanic Gardens by Mr. Lynch and Miss Pertz, which illustrated the very great variability which appears in the offspring of the various crosses. In several cases, specimens of *Heritiera* of a certain degree of the reciprocal cross were produced, showing excessive variability, and proving how greatly the peculiar characters of *Heritieri* may be obscured in the offspring, even of the first cross. Five specimens of *multiflorus* × *Heritieri* ♂ were exhibited, each of which was consequently not true to type. Experiments had entirely confirmed Darwin's observation,

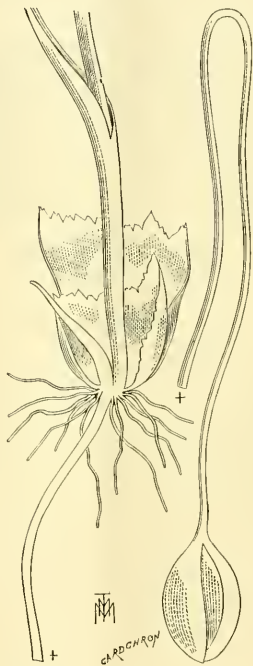


FIG. 117.—TULIP WITH "DROPPED" BULB.
The New Bulb is placed at the bottom of a tube or sheath prolonged downwards.

(See Report of "Tulip Conference.")

THE DISCUSSION.

A considerable discussion was engaged in by several of the gentlemen present, the greater part of which had reference to a disease by which the plants are sometimes attacked. Mr. Wright was surprised that more had not been said by Mr. Needham respecting the disease, and after referring to many instances in the south where it had done much mischief, invited the latter gentleman to inform the conference whether it was prevalent in the north, and if so, if the cultivators there had found means to prevent it becoming an epidemic. Mr. Needham replied that he was unaware that the disease had been so common among northern collections as it was in the south. From the appearance of diseased plants in various parts of Tulip-growing counties, they were convinced that plants were not attacked by the fungus before the epidemics had been broken by hail or frost, or some other cause. They admitted, however, that when the fungus had obtained a footing upon such a plant, the spores from the same were afterwards sufficiently strong to successfully attack a healthy and undamaged plant. Mr. Bentley replied to much the same effect. Mr. W. BARR also attributed the fungus to be an after-effect of damage to or weakness of the plant. A gentleman remarked that his Tulips were attacked by a fungus in spring that worked much injury upon them, and this later

that Cinerarias are self-sterile in a high degree. They hybridise, on the contrary, with great readiness. An accidental hybrid between Heritiera and Cineraria, and the reciprocal were not shown, the two plants being quite unlike each other. One seedling multiflorous × garden Cineraria, ♀, had been produced which was almost entirely female, a few anthers only appearing in later inflorescences. These experiments were to be continued, but so far as they have gone they were not very convincing with the view that the Cineraria was a hybrid between several species, cruentata, lictericata, and probably multiflora being among them. The two first are named by most writers as probable parents.

ROYAL BOTANIC.

May 19.—The annual summer exhibition of the Royal Botanic Society was held on Wednesday last in the usual spot in the society's gardens at Regent's Park. In comparison with the display last year, the exhibition recently held was not weaker; in comparison with that it should be, however, seeing there are upwards of twenty classes, it was unsatisfactory. The society will probably have some difficulty in restoring the popularity of this show, seeing that the Temple Show is now so great a success, always at a date but little removed. Mr. Sowerby is, however, making efforts to bring about this result, and if the best methods are adopted, more or less success will assuredly follow. The comparative absence of competitive collections was in some measure atoned for by the trade displays, and though small, the exhibition was a pretty one, and being held in most auspicious weather the visitors to the gardens were numerous.

Below we have noticed the exhibits other than competitive.

HONORARY EXHIBITS.

Exhibits of Roses were made by Messrs. Wm. Paul & Son, Waltham Cross, and Mr. H. Rivers, Regents' Nursery, also at Waltham Cross. Messrs. Paul's collection was a very fine one, and exhibited a careful arrangement. Standards or tall plants with furnished stems of such varieties as Crimson Rambler, Claire Jacquier, Pride of Waltham, and White Lady, were dotted among the well-flowered dwarf plants of many varieties. Beds of cutting blooms and plants of Adiantum Fines gave a nice facing to the group. The new Tea Rose Eschontera was represented by some very pretty flowering sprays of pale flesh coloured blooms. Mr. Rivers's exhibit included, in addition to plants in pots and cut blooms in variety, a few dwarf plants in flower of the new and vigorous growing variety Mrs. Rivers. Mr. Cnas. Turner, Royal Nurseries, Slough, made a display with well flowered plants of desirable varieties of Indian Azaleas, and interesting with a few Spruces.

New or interesting plants from Mr. W. Bull, 536, King's Road, Chelsea, included Anemita rotundifolia noticed at the Drill Hall last week, a variegated variety of Ficus radicans, Asparagus Sprengeri, Davallia eppiphylla, and Draecena rex, having broad leaves, widely margined with yellow.

A very commendable group of miscellaneous plants that might have been mistaken for one from Messrs. Lang or Peck, was exhibited by Mr. H. Rivers, Regent's Park. New Cross, Essex. The Helmsia Regent's Park. It was staged with considerable taste, though a few of the plants might have been disposed more effectively. Mr. Scott also contributed a group of Pelargoniums in flower.

A display of herbaceous Calceolarias in bloom was made by Mr. Jno. R. Box, West Wickham and Croydon. The flowers denoted a good strain.

Hardy Rhododendrons in named varieties were shown by Messrs. Jno. Waterer & Sons, Ltd., Bagshot, Surrey. The plants were from 2 to 3 feet in height, and well-flowered.

Messrs. T. F. Rivers & Sons effectively ornamented one of the half-circle Hill Revue's with a group of Nectarine and Peach trees in pots, all of them almost perfect in appearance, and splendidly cropped with handsome fruits.

Double-flowered Begonias were shown by Mr. Thos. S. Ware, Hale Farm Nurseries, Tottenham, in a few choice varieties. The Jubilee Begonia is a pretty flower with salmon-scarlet outer petals, and white centre; Prince of Wales is a striking shrubby Begonia, with a small pure white centre, being a new break in this section; Golden Queen of England is a good smooth-petalled Camellia-like flower of pleasing tint.

Messrs. SCRIVENER & Co., Watford, had tasteful floral arrangements of diverse description.

An exhibit of cut vegetables, and flowers grown in the vicinity of Regent's Park by Mr. Kalf, gr. to Mrs. Abbott, was exceptionally commendable as a local garden. This included a couple of Nectarine trees in fruit, a couple of dozen well-fruited Strawberry plants of the variety Royal Sovereign; Peas, Sutton's Seedling Marrowfat, ready to gather; French Beans in a similar stage, and some Goshinus, &c.

A fine display of Tulips was made by Messrs. P. Barr & Sons, King Street, Covent Garden, London; a great many of the late-flowering varieties were represented in excellent condition in this collection. Several other species of hardy Tulips were included, such as the following: Prince of Orange, a very brightly coloured flower of large size. A few varieties of the florist's section were exhibited to name upon trays. Altogether a very bright exhibit was made.

An exhibit of Mr. H. O. TANSEVER, 106, Brompton Road, S.W., illustrated the systems adopted in Japan of arranging cut flowers and foliage in positions as if growing.

Obituary.

MR. DUNCAN McLELLAN.—We note the death, on April 19 last, at the age of 85 years, of Mr. DUNCAN McLELLAN, for many years superintendent of the Glasgow public parks. The deceased was a native of Luss, Dumbartonshire, a place famed for the beauty of the surrounding landscape, which must have awakened in him a taste for landscape gardening that he carried out with so much success in the parks of the north city. He was appointed superintendent of the parks in 1853. At that time Glasgow possessed only one park, The Green; but in 1852 the corporation had purchased the land of Kelvin Grove for the purpose of a public park.

Mr. J. H. Paxton was consulted, and furnished a plan for laying out the ground, and the carrying out of the same was entrusted to the newly appointed superintendent, and he performed the work in an excellent manner. Four years later the Queen's Park was laid out according to plans made by Sir J. Paxton; Alexandra and Maxwell Parks were also under his charge, the former having been laid out by him, and the latter much improved after it came under his care. After forty years' active service, Mr. McLELLAN retired in 1893, and at that occasion his friends presented him with this portrait, which now adorns the walls of the Corporation Galleries.

MARKETS.

COVENT GARDEN, MAY 20.

Table with columns for 'CUT FLOWERS—AVERAGE WHOLESALE PRICES.' and 'FRUIT—AVERAGE WHOLESALE PRICES.' listing various items like Anemones, Azaleas, Bouvardias, Carnations, etc., with prices in s. d. s. d.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

Table listing various plants in pots such as Adiantum, Aspidistra, Azaleas, Calceolarias, Cinerarias, etc., with prices in s. d. s. d.

THE WEATHER.

[The term "accumulated temperature" indicates the aggregate amount, as well as the duration, of degrees of temperature above or below 42° Fahr. for the period named; and this combined result is expressed in Degrees Fahrenheit "day-degrees" signifying continued for twenty-four hours, or any other number of degrees for an inversely proportional number of hours.]

Table with columns for 'TEMPERATURE', 'RAINFALL', and 'BRIEF SUN.' showing weather data for the week ending May 15, 1897, and accumulated data.

The districts indicated by number in the first column are the following:— 0, Scotland; N. Principal Wheat-producing Districts—1, Scotland, E.; 2, England, N.E.; 3, England, E.; 4, Midland Counties; 5, England, including London; S. Principal Grazing, &c., Districts—6, Scotland, W.; 7, England, N.W.; 8, England, S.W.; 9, Ireland, N.; 10, Ireland, S.; *Channel Islands.

ENQUIRY.

"He that questioneth much shall learn much."—BACON. WATER-LILIES DYING OFF.—A correspondent sends the following communication, together with a large mass of Water-Lily root. "The root sent is that of the common Water-Lily. I don't know what the matter with it. I planted a dozen of them six years ago, which grew wonderfully till this year. I have examined them at various times, but I can find no trace of growth. [There are a few healthy buds visible. Ed.] The pond is formed in a peat bog, the bottom of it being rest, accumulated mud, and vegetated matter; the water, which is of good quality, is furnished by a spring, and the depth in all parts of the pond is 2 feet, and width 70 yards by 30 yards. The pond is much infested by water-rats; there are also a few ducks on the water. Last year we had a pair of swans, but as soon as the flowers of the Water-Lilies made their appearance they gobbled them up, so we had to shift the swans to another pond in the locality. Some persons think that it is the rats that are eating the Lilies, others that the ducks are the delinquents. I have watched them both, but could not detect either in interfering with the roots. I shall be exceedingly thankful to have the mystery unravelled."

VEGETABLES.—AVERAGE WHOLESALE PRICES.

Table listing various vegetables like Artichokes, Beans, Cauliflowers, Cucumbers, etc., with prices in s. d. s. d.

POTATOS.

Finest quality standing colour have advanced a shilling; trade very dull for second-rate samples.—Dunbar Main crop, 10s; do, Saxtons, 10s; do, Lincoln Bines and Main-crops, 50s to 75s; do, Giants, 50s to 60s; do, Saxons, 40s to 60s per ton. Canary, now 13s. to 15s.; Malta, 40s, 13s. to 16s.; Jersey do, 14s. to 16s. John Bath, Wellington Street, Covent Garden.

NOTICES TO CORRESPONDENTS.

APPLE SHOOTS: *J. W.* The buds had partially become fruit-buds, but from some climatal or other circumstances, they, as it were, altered their mind. Thus the half-and-half character of the development.

A JOB OF RENOVATING A SMALL GARDEN: *N. M.* The charge seems to be by no means excessive, and is less than labourer's pay would amount to, so that you get nothing for your skill as a garden-craftsman. As no estimate was made, the owner will doubtless have to pay your bill. Can you not obtain professional advice in the neighbourhood, so as to get the work valued?

BOOKS: *Otto Schatz.* A small manual, *The Peach and Nectarine*, published by Mr. Upcott Gill, Bazaar Office, 170, Strand, London, W.C., 1s. 7d. by post, would answer your purpose.

CHRYSANTHEMUM: *J. C.* The bloom of the variety, *W. H. Lincoln*, is a very good one for the date, but *Chrysanthemum* being superfluous flowers at this season we cannot favour them. Try to extend the season by obtaining good blooms in late January and February, after which month the less we see of large *Chrysanthemum* blooms the better—until October, at least.

CORRECTION.—Mr. St. Julien Arabin, Belmont Nurseries, Portsmouth, Southampton, desires to inform our readers that Mr. J. Fulford was not appointed manager of the nurseries, as was stated in a recent issue of *The Gardeners' Chronicle*, but to some other office in the same business. The manager of the glass department, recently appointed, is Mr. Tyler, who was with Mr. H. E. May of Edmonstone for many years.

CUCUMBER DISFIGURED: *A. G. B.* The injury remarked is of a mechanical kind, the nature of which we do not know.

FITS DROPPING FROM POT-TREES: *B. C. M.* Dryness or excessive wetness of the soil at an early stage of growth, causing checks to development. As the season advances, the evil usually declines.

FINGER-AND-TOE, OR ASHURT: *T. C. R.* The disease clubbing is found in Crucifers only, and is due to a fungus, *Plasmodiophora Brassicæ*. The best method of averting an attack, for it is infectious, is to constantly change the crops, never following a crop of Cabbage, Cauliflower, &c., by one belonging to the same family, and to plant no seedlings which possess swellings on the root. All frames and pits in which the early sowings are raised should be disinfected with burning sulphur; and if the soil can be spread out and similarly disinfected, it will afford more complete security. Leave no remains of diseased plants in the ground, but dig them up, so as to leave nothing behind, and clear forthwith, or bury them in the pits deep, as by trenching the land is readily done.

FRUIT AND LEAVES OF STRAWBERRY INJURED: *G. M. T.* No fungus, but most probably caused by draughts of frosty air impinging on the plants, arresting development, and at last setting up decay.

INSECTS IN PALM SEEDS: *G. B.* The insects infesting seeds of *Chamaerops* are no doubt minute beetles, but it is impossible to give a name without seeing some of them. The eggs are probably laid when the seeds are soft, and from those seeds with holes in them the perfect insects have no doubt escaped. Suppressing the seeds to have germinating power, there should be no *prima facie* reason why they should not be sown. The insects would not be likely to attack any part of the plant but the seeds, and it would probably be several years before the plants were in a seed-bearing condition, even if allowed to arrive at that stage. As a matter of precaution, we would advise that the seeds be placed with a little naphthaline in a practically airtight box for a few days before sowing. *R. McL.*

INSECT ON DENDROBIUM: *W. K.* The beetle damaging *Dendrobium* is *Diaxes dendrobii*, several times noticed in this Journal. Its origin is supposed to be Barro, or Assam, but all the known examples have been found in Orchid-houses in this country. It is no doubt imported in the plants or the larva or pupa state. Whether it actually breeds here is uncertain. *R. McL.*

INSECTS: *T. W., Blechnum.* Millepedes are very common indeed, and equally harmless.—*Cucurbit.* We do not find any insects likely to have injured your plants, and the roots seem healthy.

MANURE FOR ROSE AND FRUIT-TREE STOCKS: *W. H. B.* In reply to an enquiry on this subject, it may be

stated generally that manures are either forcing or maturing in their effects. Sturdiness of growth can only be secured by the process of maturation and solidity of the plant-tissues; which will be effected by mineral manures of which the ashes of lime, basic slag, bone meal, potash, and the like. Vigour of growth and succulence, on the other hand, are obtained by the application of nitrogenous manures, of which may be mentioned nitrate of soda, sulphate of ammonia, dried blood, guano, &c. To aid the decomposition of the dung which has already been applied, give during the summer the following ingredients per acre:—nitrates of soda 100 lb. superphosphate 300 lb. kainit salt 200 lb. Mix together and apply at two dressings. Or, about 2 ounces of the mixture may be sown per square yard around each tree. Lightly fork or rake in. Ammoniacal guano applied at the rate of from 1½ to 2 cwt. per acre, or 1 ounce per square yard, twice during the growing season will be found of great benefit. The nitrogen and phosphate present in good guano are in such different degrees of solubility that they supply plant food more slowly and evenly through a series of growth than can be done by other fertiliser. It is therefore particularly adapted for sturdiness combined with a free growth of wood. *J. J. Willis, Harpenden.*

MANURES FOR FRUIT TREES: *W. H. B.* Superphosphate of lime, either animal or mineral, potash; sulphate of ammonia, or nitrate of soda, if the land be poor in nitrogen; bone-meal, kainit, lime. Quantity, separate or alone, from 2 to 3 cwt. per acre, at twice or thrice, with the exception of the last three, which may be used much more freely; soot also is good as manure.

MARKET GARDENING: *Alpha.* The cold wind-swept stretch of country between Chester and Liverpool is not one which a skilled gardener would select in which to grow produce for market; some warm Welsh valley, or a spot near the seaboard of South Wales, South Devon, South Cornwall, Sussex, or the indented coast of South Essex, would be preferable even should all the culture be carried on under glass, and still more so if out-of-doors crops be those chiefly depended upon. Round London for a distance easily reached by horse and wagon—say 15 miles—land of good quality is obtainable without much difficulty, but rent is higher and labour dearer than in more remote districts. The Vale of Aylesbury, now well served by railways, should be a good place to start in business as a grower for market. That part of Kent stretching from Maidstone and Rochester towards Swanley, Orpington, and Westerham is a favourite gardening district, as is shown by the great number of orchards, Hop gardens, Strawberry, and Raspberry gardens, &c. existing there.

MUSCATA OF ALEXANDRIA GRAPES, DISEASED, SENT IN TIN BOX, WITH AN UNSIGNED NOTE ACCOMPANYING THEM.—The fruits show signs of "spot," *Glaesporium leucolor.* There is no known cure, although it might be prevented by the use of the Bordeaux Mixture in an attenuated form, or the free use of flowers-of-sulphur in the spring-water and in evaporating pans, and as smokes mixed with whitewash on the hot-water pipes. Cut off and burn every affected berry, and avoid suddenly chilling the air of the vinery.

MICRO ORGANISMS, &c.: *C. D. M., Bombay.* It requires a volume to answer your questions. We think you will get what you want in the earlier chapters of *The Natural History of Plants*, by Kerner, Oliver's translation.

NAMES OF PLANTS: *Correspondents not answered in this issue are requested to be so good as to consult the following number.*—*H. J. R., Florence.* *Cypripedium Gardenii* is a species of *C. presicium*, and could not be applied to the specimen you send, which is *C. God-froyae*.—*F. R., Villanova.* The name *Maxillaria vaillanthea* is applied in gardens to the species of which you send a flower, but we are unable to verify the name; 2 is near to *Miltonia spectabilis* radiata, but the spaces between the lines on the lip in yours is lilac colour in place of white. The three *Odontoglossums* are all varieties of *O. luteo-purpureum*, an extremely variable species.—*G. G. Claytonia proflata.* *R. F. B.* The weed is *Achillea millefolium*. If a lawn be badly infested with it, less than deep digging and sowing with the best lawn mixture is of any use. Where the weed is not very abundant, dressings of manures to cause the grasses to grow close and thick and smother the plants, do good. These

are rotten manure, nitrate of soda, sulphate of ammonia, dried blood, &c.—*Rob Roy.* *Tilia Europæa.*—*Alto.* 1, *Lantium maculatum*; 2, *Prunus Padus*; 3, *Polytaichum angulare proliferum*; 4, *Cyperus latus variegatus*; 5, *Ardisia crenulata*.—*J. M.* *Prunus Padus* (*Bird Cherry*).—*Jane Eyre.* *Ceanothus azureus* var. *Gloire de Versailles*.—*J. M.* *Prunus Padus*.—*G. C. I.* *Linnæanthus Douglasii*; 2, *Scilla campanulata*; 3, *Cheiranthus ochroleucus*; 4, *Valeriana officinalis*; 5, *Euphorbia Cyparissias*; 6, *An. Epimedium*; we cannot tell which without the flowers.—*W. C.* *Cornelia Emerus*.—*Sample Plant from Germany.* *Oncidium sphaiculatum*.—*Bulbous Plant in box with Scydinella.* *Tritonia crocata.*

PAR-SIP BROWNING OF THE ROOTS: *L. P.* The cause of the disfigurement is due to a fungus. Change of ground or sowing on prepared soil placed in holes made with a large dibber, are remedies. Fungus-infested land might be dressed with gas-lime in the autumn.

PEACH LEAVES: *J. P.* Peach-blisters, caused by a fungus, cut off the leaves and burn forthwith.

PEACHES: *A. S.* The fruits are mil-leaved, and should be sown and burnt. Apply flowers-of-sulphur to the trees when the leaves are moist. The latter are injured as if by scalding. There is no fungus on them.

PHALENOOPSIS: *A. G. Scoto Fiorentino.* The collapse of the tissues shown in the leaf of your *Phalenoopsis* is common in *Phalenoopsis* under cultivation, and may generally be taken to indicate something unsuitable in their surroundings; or a check in the nutrition of the foliage at some time or other. Sometimes the evil arises from the plants being placed where the direct heat from the hot-water piping reaches them; at others a sudden fall in the temperature may cause it; or defective ventilation. The cause is difficult to name unless one is in a position to see the plants in the situation they were when the mischief happened.

PLUM TREES: *W. D.* The silver-leaf disease, very common in *Rosæ*. Its origin is mysterious, probably due to a fungus. Cut away freely all diseased portions, and see the trees well, and they may outgrow it, but generally they die, whether under glass or outside.

SOFT-SOIL TO KILL APHIS: *A Reader of the Gardeners' Chronicle.* Take to three ounces in a gallon of warm water; half-pint of tobacco-water, or a handful of Quassia Chips soaked in the soap-suds for twenty-four hours would make it more deadly.

STRAWBERRIES BY POST: *R. G.* Wrap each fruit separately in a soft leaf, say those of the French Bean, Lime-tree, &c. and then place on a bed, half-inch thick, of the softest green moss, in one layer only, with moss between the fruits, in boxes of 8 by 12 by 2½ inches. Several boxes might be tied together if necessary.

TO CLEAN FLOWER-POTS: *M. P.* If you do not want to wash them, you might make a fire of garden rubbish, and place the pots thereon, and thus destroy all conifers, moss, mould, &c., that may be adhering to them. We should not advise you to use "weed-killer," as it contains arsenic, some of which might impregnate the pottery, and injure the plants placed in the pots. The best way is to bury dirty pots in the soil or in coal-ashes, letting them remain for several months, then cleaning them with a dry brush or wisp of straw.

TOBACCO PAPER: *Fumigator.* The sample sent seems to be all right, but it is not, we have no means of knowing. Probably the quantity employed was too large for the houses, considering the very tender and easily-injured condition of the foliage and fruits of the *Peaches*.

TOMATOS: *W. de Son.* Your fruits are affected with "spot" fungus (*Cladosporium fulvum*), many times figured in these pages. Remove and burn all fruits that are observed to be attacked, and it is important that this be done before the fungus has an opportunity to spread.

COMMUNICATIONS RECEIVED.—*J. T., W. T. T. D.,*—*Behnick.*—*Royal Botanic Society.* *W. T., D., J. M. H., J. E. T. A., H. S., H. J., J. A., C., Royal Assam.*—*T. B. R., J. O. B., A. D., G. T., W. O., B., W. C., M. C. D. B., G. C. B., W. D., A. E. R., J. S., J., B., F., M., Rugby.*—*E. J. H., Dorch.*—*J. B., M., W. H., H. G. C., B., B., & Co.,*—*Cavillo Brown.*—*T. E. R., J. E. T., Aitchison.*—*J. M. H., A. F., C. T. B., G. W., D. T. F., D., R. W., W. J. B., H. C., Houston.*—*W. F. D.,*—*Handed to publisher.*—*J. G., J. B.,*—*Photographs.*—*Medulla.*



THE
Gardeners' Chronicle.

SATURDAY, MAY 29, 1897.

ARBOR-DAY.

NOTWITHSTANDING the luke-warm water which Mr. J. MacDonald poured so plentifully on this project in general, and on the planting of fruit trees in hedge-rows in particular (see p. 292), it is to be hoped that a good deal of extra planting will be done alike in and around towns, and in the country generally, in the sixtieth year of the Queen's reign. Now, too, that trees and hardy plants of all sorts are rendered portable, and therefore suitable for planting at any season, it may be hoped that the act of planting one or more fruit, or other trees, may not be omitted from the functions of the Diamond Jubilee festivities. Already, and very largely through the stimulating example of our Royal House, some event in the lives of many of our greatest men are commemorated by trees, some of which adorn our landscapes. If I remember rightly, it was one of the Dukes of Argyll who said to one of his sons—"Aye, be sticking in a tree, Jock, it will grow while ye sleep;" advice which showed a keen eye for the main chance. Heartily accepted and energetically pursued, it has changed many a barren wild into a profitable forest, and transferred many deficits at the estate bank into substantial balances on the right side; and still there is room enough and to spare for thousands of Arbor-days before the great national work of afforesting our waste lands is completed. Neither should immediate money-profit be the be-all and end-all of our plantings. As you so well said in your leader, we should plant our roads, walks, and footpaths, for shelter, shadow, landmarks, and wind-breaks. Memorial and hedgerow-trees, shrubs, groups, avenues, home woods, form the essential parts of our richest and most mellowed landscapes. These link the present to the past by the strongest and tenderest ties, make the dead planters live again in their beautiful products, and enrich and ennoble the beauty and verdure of our trees and shrubs, with the sweetness and the light of sentiment.

All this seems so natural and so desirable that it seems difficult to imagine that anyone can be opposed to it. And very possibly Mr. J. MacDonald is not opposed to Arbor-day, nor to fruit-trees in hedges in the abstract. Oh, no! he simply means not there, not now, not so. By all means spread greenery galore in your wide parks, crowd your high-walled gardens with fruits of many colours. But as to planting them against dusty roads, to make thieves of the boys and girls going to school, of the tramps and the travellers, and trespassers and hedge-gappers, or of the open-eyed cattle on the pounce for weak places in the fences, such folly and wickedness cannot be thought of.

Perhaps all this may be put more brightly and pithily in a sentence or so, thus:—Cast not your pearls—that is, your fruit and other trees—

before the stock and the swine, lest they steal your fruit, break your trees, tread down your fences, and, mayhap, turn again and rend you. Will they? I will not, cannot believe it for a moment. All experience—and it is accumulating every day and each hour—is dead against it.

One of the most cheering facts of the century and age is the safety of parks and gardens, as well as of fruit where it is most exposed, and wholly trusted to the general public. School gardens, the growing love of Nature, technical education, lectures, the penny press, the enormous spread and growing popularity and cheapness of horticultural literature, are fulfilling many of the purposes of a popular university in teaching our children their humanities, not the least important of which consists in the knowledge, care, and tender handling of trees, plants, fruit, flowers.

When every home and school child has a fruit tree, bush, or living plant of its own to cultivate, all to and for itself, this last complaint of injury or loss to wayside or hedgerow trees, fruits, and flowers will become less and less, and every free citizen and romping boy and girl will become a protecting policeman to those mute ministers of beauty and plenty that shall early in the twentieth century convert tens of thousands of miles of bald, bare, sunburnt, dusty highways and bye-ways into arbours of verdure, and avenues of Apples, Pears, Cherries, Plums, Walnuts, Chestnuts, Acacias, Mountain Ash, Planes, Damsons, Ballaces, Sles, Thorns. The want of fruit by the roadside, its absence from hedgerows, its scarcity in so many gardens and allotments, its miserable quality, its dearthness in so many rural districts, are the chief causes of petty thefts and thoughtless injury where either exists. Plant more fruit trees and bushes, trust school and other children more, and let them see and know that they are trusted, and the depredations will cease in proportion till they become so small as not to be worth considering. It is not only quite possible to plant fruit trees near a hedge without injuring the latter, but it would often be easy to form the fences of fruit trees and bushes, such as Damsons and Gooseberries, Ballaces and Sles.

As a lasting memorial of this Diamond Jubilee year, what more beautiful or gracious souvenir could be suggested than the clothing of several thousands of the miles of our bare walls that disfigure our towns and rural districts? Large numbers of these may be planted with Peaches, Nectarines, Apricots, Apples, Pears, Plums, Cherries, and the shorter ones with Gooseberries, Currants, Raspberries, Roses. Some years since I passed through a village near Oxford, and noted that almost every cottage by the side of the public highway was embowered rather than covered with golden Apricots, which paid the rent of the houses and small gardens, leaving a handsome margin after paying the shoe-bills of the family.

Anyone knowing Cambridgeshire, and East Anglia in general, will be able to recall not a few illustrations of Pears, Cherries, Apples, Apricots, and specially of Gage and other Plums, that have paid the rent of the house as well as clothed them with beauty for years.

Some of the famous backs of the colleges of Cambridge also afford fine examples of Pears and other fruits in clothing high walls with beauty and plenty. There are also some notable trees in the old gardens and orchards of East Anglia as if to prove that the wasted orchards, alas! all too common, did not originate either in the soil nor the climate, but with their tenants, owners, neglecters. Distinguished students of older times, such as Milton, seem to have had their Arbor-days. Hence we have the venerable remains of Milton's Mulberry at Cambridge, and many have enjoyed Addison's long walk at Magdalen College, or the Broad Walk at Oxford. And while not a few of the old giant trees are going or have already gone, young and smaller ones are springing up in various places, one of the most promising of Pears on the Quince, and Apples on the Paradise, forming

the fine new gardens occupying the space between the Botanic Gardens and the Great Eastern and other railway stations at Cambridge.

Not a few towns, notably Perth, used to be famous for its Jargonelle Pear trees within the city, and it is to be hoped that its growing stock-market and expanding railway traffic have neither lessened their numbers nor lowered their quality.

Nor need the fruit from hedge-rows be so inferior or worthless as Mr. MacDonald assumes, as to make it as hardly worth growing or gathering. A little extra skill and forethought might easily render hedge-rows some of the most perfect sites possible for fruit-growing.

Sufficient soil may readily be had or provided; excess of water is impossible on the crown of a ditch-bank, or the top of a hedge-row; light, air, dew, rain, abound.

But it would be a waste of space to argue the point *de novo*. After all, fruit and other trees in hedges are not so rare as to be unseen and unknown, or seen only as mere scarecrow bogies, perched or crowded up as warnings to fence-breakers, stock-loosers, and producers of rubbishy fruit. All this is begging the entire question to frighten Arbor-day planters from our waste places, road-sides, hedgerows, bare walls, houses, railway embankments, allotments, and small gardens.

But why should they pause in their great and patriotic work of planting? Your correspondent seems almost to give up his whole case against fruit-tree planting in hedge-rows when he chronicles the effects of a hungry Elm-tree on a crop of Potatoes as his strongest charge against it! Neither I, nor you, nor anyone else want to spoil a good hedge for the satisfaction of growing inferior fruit.

Quite the contrary, and there is no reason why the waste walls, treeless hedge-rows, should not become coigns of vantage for the higher culture and more telling display of superior fruits. Such is also the teaching of Mr. MacDonald, only a few sentences before his summary of evils and mischiefs of hedge-row and roadside planting. The following sentence is so valuable that I must quote it entire.

"Where the hedge-rows are under the supervision of the County Council, such plantations (that is, of fruit-trees in them) would be a great advantage as examples for their instructor to demonstrate upon, as the position they occupy would be such, that even those who ran, or rode either, could read exactly." And to read to any good purpose of pleasure or profit the trees and the crops must prosper. Permit me to conclude with the closing sentence from your leader on p. 236, for the special management of Arbor-day road-side and hedge-row planters. "A man who plants a tree properly is a public benefactor; if he can combine his beneficence with a village festival, and so lighten the dullness of village life, while at the same time evoking a spirit of patriotism, he will be a three-fold benefactor." *D. T. Fish.*

NEW OR NOTEWORTHY PLANTS.

TREVORIA CHLORIS, *n. gen. et spec.**

This is the second of a number of new genera of Orchids which I have discovered during the twenty-one years of my travels in the Andes. Both *Trevoria* and my *Gorgoglossum* are old acquaintances of mine;

* *Trevoria*, *n. gen.*—Sepala crassiuscula, libera, patentia sequilobis, convexa, columnae basi oblique inserta. Labellum sessile conspicue angustatum. Labellum carnosum, concavum, erectum, cum basi columnae immobile articulum, anticis trilobis; lobi laterales erecti dolabriformes, columnam laxe semiamplexantibus; lobus medius continuus linearis hastatus, acuminatus, porrectus; discus angustatus, acute mucronatus, postice in ligula carnosae, libera, columnae sequilobae et parvella protractus. Columna longiuscula, teres, spica clavata v. abrupte truncata, altera, in ima basi geniculata, apoda. Ciliandrium planum v. leviter convexum, rotundatum, exaristatum (?). Rostrillum bidentatum, membranaceum. Stigma foveae sub rosetto transversa excavata. Anthera terminalis opercularis, membranacea, 1-lobularis. Pollinia 2, cerea, oblique pyriformia, postice sulcata, imbricopendiculata, debiscite affixa. Caudicula ligulata sig-

but owing to their great rarity, and their growth in habitats very difficult to reach, insufficient floral material have made it hitherto impossible to publish them (see fig. 123).

Gorgoglossum Reichenbachianum, Lehmann (MS., 1879), was met with in December, 1879, in one single specimen on the Western Andes of Ecuador, at an elevation of 300 to 600 metres above sea-level. The single specimen was duly given to the late Professor Reichenbach; but the flowers, having lost their pollinia, he did not venture to describe the plant, and it wandered with some 3000 other numbers of the herbaria for twenty-five years to the grave at Vienna. Some eleven years later, when I knew already the fate of my unique *Gorgoglossum*, I undertook an especial journey to the locality in order to secure a few plants for cultivation in one of my estates in the Cauca. Only five plants were found, of which to-day one exists in my possession, and another in that of Sir Trevor Lawrence, the rest having been lost on the sea-voyage.

set seed-vessels, but no flowers. The plants I tried to take to the Cauca for cultivation, but, alas! they were stolen from me by some rascal at Esmeraldas during my absence from the steamer, together with a number of other botanical treasures. Nothing more was seen or heard of this plant, which, by-the-by, looked quite novel and interesting until last year, when during an exploration of a certain portion of the Western Andes of Colombia, with a view of projecting a map on behalf of the Cauca Government, a few plants of this species of Orchid were observed. The species found in Colombia is, however, quite distinct from that of Ecuador. The latter grows at an elevation of 500 metres above the sea, and produces flower-spikes of from twenty to thirty flowers, the size and character being as yet unknown, while the Colombian one inhabits a region from 1,500 to 1,700 metres above the sea (as far as observed), and bears racemes of only three to five—commonly, only three flowers.

As a genus, *Trevoria* is very characteristic and

I have named this genus of Orchidaceæ in honour and commemoration of Sir Trevor Lawrence, one of the most enthusiastic orchidists that ever lived. *Trevoria* has to answer our purpose; *Lawrencea* and *Lawrenella* being already in existence in Compositæ and Malvaceæ respectively. May Sir Trevor's love of Orchids *perdure sempervirent* as Chloris the goddess of flowers. *Popayan, February, 1897. F. C. Lehmann.*

HOME CORRESPONDENCE.

CAPTURE PLANTS FOR INSECT PESTS.—As one of the earliest cultivators to employ Mustard-seed plants and dross as decoys for diverting and destroying wireworm, I was much interested in your note of last week in *Gardeners' Chronicle*, p. 305. It will prove glad news to many that wireworms will forsake Carrots and Parsley to feed on Lettuces. It is less surprising that the mole-cricket, where it proves



FIG. 118.—*CALADIUM ALBANENSE*: BRONZY-GREEN, CRIMSON CENTRE.

CALADIUM SPECTOSUM: VIVID GREEN, WITH BROAD CREAMY-WHITE VEINS.

(Exhibited at the Temple Show by Messrs. F. Sander & Co. See Report, p. 353.)

My first acquaintance with *Trevoria* occurred in 1887. Only three specimens were seen, bearing thin, drooping spikes, about 40 cm. long, of thickly-moidea; glandula parva ellipsoidea. Capsula fusiformis, leviter acuta, deliicans.

Herbæ epiphytica: America tropica, pseudobulbis elongato pyriformibus, non compressis, 1-foliatis. Folia ampla, subcoriaceæ, plicato-venosa, in petiolum contracta. Scapi ad basin pseudobulborum inversi simpliciter. Racemi laxi pauciflori, floribus maximis, carnosis, pedicellatis. *F. C. Lehmann.*

Trevoria Chloris, n. sp.—Laxæ caespitosa. Pseudo-bulbi longe pyriformes. Folia oblongo lanceolata, acuminata, longe petiolata, plicato venosa, usque 0.40 m. longa, 0.10 m. lata. Spica pendula pauciflora, vulgo 3-flora. Bractee triangulo cuspidate, cucullate. Sepalum dorsale oblongo-lanceolatum, acuminatum, revolutum, 0.35 m. long., 0.15 m. lat. Sepala lateralia ovata, oblique acuminata, 0.05 m. long., 0.03 m. lat. Petala ligulato-falcata, torta, cuspidata, 0.06 m. long., 0.008 m. lat. Labellum supra descriptum; hypochilium 0.02 m. long., epichilium ligulatum 0.04 m. long., 0.004 m. lat. Flores carnosae, viridæ, discus albus.

Hab. Colombia: crescit ad arbores in silvis densis, humidis, ad declivitates occidentales. Andium occidentalium civitatis Popayan alt. s.m. 1500—1700 m. mense Septembris—Ocotubris flores. *Herb.*, No. 10,035, *Lehm.*; *l. Plant.* M.S.), t. 1027. Popayan mense Febr., 1897. *F. C. Lehmann.*

distinct. Its nearest neighbours are *Coryanthes*, *Schlimia*, *Stanhopea*, and *Gorgoglossum*, but it is distinguishable at first sight from either of them. *Trevoria chloris* produces large fleshy wholly green flowers, placed on the drooping spike in the manner of the buckets on a drooger-chain. The narrow disc of the lip and the thick coriaceous process at its base are the only different coloured organs in the flower; they are pure white. Both from a morphological, as also from a physiological point of view this genus is very novel and interesting. The position of the column and lip, standing straight upright in an ureolate manner, the thick fleshy process at the base of the lip, being of exactly the same length as the column, and standing parallel and closely adpressed to that organ, the peculiar shape and insertion of the stigma and several other items are wholly novel, and the arrangement of them to each other may set at naught some of the pet views of modern hypercritical speculators with respect to the aid of insects in the fertilisation of Orchids, or give rise to quite new conceptions.

destructive to indoor or ridge Cucumbers, should be allured from the Cucumber roots through a bait of mealy Potatoes. A serious question arises in connection with most capture plants: viz., the future effects of the special feeding on the reduction or increase of the pest. It seems quite conceivable that a liberal ration of such capture-plants as Mustard, Lettuces, Potatoes, Carrots, succeeded in not simply diverting the pests from one crop to another, but also in destroying pests, or forcing them to shift their quarters. In a word, more practical evidence seems wanted to prove that the Lettuces and Potatoes, not only saved the Carrots, Cucumbers, Parsley, through feeding the pests on pastures new and sweeter, but that the capture-plants weakened and decimated the pests. In our earlier attempt with capture-plants, the main object was destruction rather than diversion. The theory and practice was and is on the old lines, to begin with feasting and end by totally destroying the wireworm. Few of the worms that fed on Clover that was Mustard lived to feast another day. Cultivators are grateful for temporary relief from these and other insect-pests. But a permanent deliverance would prove a far

greater boon. Wireworms perished through their eating of Mustard to excess, and its consequences. Have any equally destructive effects been noted from over-feeding on Potatoes or Lettuces? Or has any one found feasts of Lettuces to lull wireworms into inertia for good? Anyhow, Lettuces seeds are plentiful enough, the plants grow quickly, and it is something gained to be assured the wireworms prefer Lettuce to Carrots and Parsley, and the two last crops are saved through the temporary diversion, if not the destruction, of the wireworms. *D. T. F.*

AQUILEGIAS.—Dr. Williamson, in his interesting paper on these hardy plants, winds up by pronouncing for *A. chrysantha*, as the very best and strongest. That is so in relation to pure species, though next to it I have found *A. cœrulea* to be robust and beautiful. But following upon the crosses made by Mr. Jas. Douglas some years since, and which gave to us such charming hybrids, I some years ago also crossed *A. cœrulea* with *A. chrysantha*, and *vice versa*, getting as the product practically identical results in plants that were stronger, more floriferous, and consequently much more effectual than either parent. *A. cœrulea* bloomed earliest, the hybrids were intermediate, the

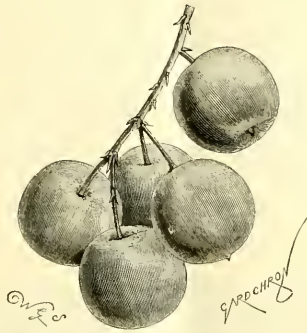


FIG. 119.—FRUITS OF DRACENA GODSEFFIANA.

issue of this journal, an article appeared over the signature of Mr. MacDonald, decanting on the disadvantage of fruit trees in hedgerows. In choosing trees for hedgerows, it is essential to consider what they may be forty or fifty years hence as regards their size, form, and money value, not omitting their value as picture trees. Of those species which are suitable for growing in hedgerows, there are the common Horse-Chestnut, common Ash, English Oak, Sycamore, white and purple Beech. Other varieties may be added, but those mentioned are valuable for their timber, and if judiciously planted and mixed, would give a pleasing effect to the eye of the traveller, and greatly enhance the beauty of the landscape. [We fear that the timber merchant would give but little money for hedgerow trees. Eo.] Mr. John Morrison, Coney Park Nurseries, Stirling, in his prize essay on "Hedgerow Trees," written for the Highland and Agricultural Society of Scotland, prefers trees planted 2 feet in front of the hedge, rather than in the line of hedge itself, and for the reason that they are apt to make gaps and spoil the usefulness of the fence; and by planting in the manner indicated by him this objection is obviated, the fence being preserved intact. Trees standing singly are more



FIG. 120.—DRACENA GODSEFFIANA; LEAVES GREEN, SPOTTED WITH YELLOW; FRUITS ORANGE-RED.

(Exhibited at the Temple Show by Messrs. F. Sander & Co. See Report, p. 353.)

straw-yellow *A. chrysantha* coming last. If the growth of the first-named was but moderate, that of the latter was tall and rather loose. Here, again, the hybrids were intermediate, and combining the large flowers of both in diverse hues and shades, produced them in greater abundance and more compact form. A row of the hybrids beside rows of the parents out-distance them in effect and in beauty materially. Many of the Messrs. Veitch & Sons' lovely hybrids no doubt have both Skinneri and californica blood in them, as well as that of the two species I have named. Only ignorance of the Columbine in all its pristine as well as hybrid beauty keeps

it out of our gardens. Yet from a few cheap seed packets, the seed being sown at once, may be obtained next year scores of plants, giving the most quaint, picturesque, and beautiful flowers that hardy plants produce. Old plants become rather exhausting of soil, and it is a good plan to raise some seedlings every year, and destroy those that are some four years old, planting each season in fresh soil. *A. D.*

HEDGEROW TREES.—The subject of trees in hedgerows is an important one, which it might be of advantage to many readers of the *Gardeners' Chronicle* to discuss at some length. In a recent

exposed to severe winds than in a plantation, and care should be taken to supply them, as far as possible, with the power of resisting the storm. This can be done to a great extent by pruning, which leaves the least area of crown to be acted upon by the wind, whilst giving the tree the power of strengthening its roots. Any straggling branches should be shortened, so as to afford the desirable balance which a tree ought to have. The rule would be, allow the top of the crown scope, but to shorten the side branches when and where necessary. By so doing, the result will be a fine, stubby, firmly-standing tree, possessing great power of resistance to

the wind. Cut off the lower branches from time to time, until they are clear of the top of the hedge, and have a clean stem of from 10 to 12 feet in height, or, at the least, considerably higher than the hedge, which will allow direct sunshine to reach the hedge plants. *A. J. H.*

BUD VARIATION IN PYRUS (CYDONIA) JAPONICA.—A deep scarlet shrub of this species, which has been growing in the garden here for a number of years, produced last year a clump of bloom of a pale pink colour. I marked the twig, and find this spring five clusters of blossom of the same tint. The whole branch bearing these flowers consist of about five shoots, and stands out conspicuously from the rest

to the cultivator or raiser of new varieties. Ed.] But the process as presented by Mr. Galton seems to be singularly difficult to conduct. In all our work in relation to flower development the practice has been invariably to select the best form for seed-production or breeding, and thus go on from year to year in higher development. That being so, could not all that Mr. Galton desires be obtained by proceeding on the reverse process, literally one of backwardation, by selecting not the best, but the worst product of every fresh sowing of seed, and thus see how soon or how long it may be possible to arrive at the original starting-point. Why not try the finest strain we have now of the Cincreria, or Cyclamen, or Chinese Primrose, or even the tuberous

ley's Seedling. The samples sent were good samples of the respective varieties, the Prince Albert being abnormally destitute of colour. The Apples were cooked in their rinds in a quick oven simultaneously, the Prince Albert having about ten minutes more to cook the fruit to a similar good edible condition. The difference in favour of the superior quality of Bramley's Seedling was strongly marked. I have no hesitation, however, in adding that both Apples are proving useful and popular in various places, and some of the samples sent are likely to keep till June, though the late Dr. Hogg gives January as the season for Bramley's Seedling, and October to March as the season for Lane's Prince Albert. As already stated, both are in fresh sound condition on May 12. Perhaps



FIG. 121.—*CYPRIPEDIUM CHLOCLARE*: STANDARD WHITE, WITH GREEN VEINS; PETALS PURPLISH-SPOTTED; LIP DULL PURPLE, DOWNY.

(Exhibited at the Temple Show by Baron Schröder. See Report, p. 353.)

of the tree, with its deep red blossoms. The petals come near in colour to those of the Apple, having their edges fringed with white. Now, as far as I am aware, the scarlet is the original colour, and the white and pink-flowered shrubs we see also in gardens are varieties. Perhaps some of the readers of the *Gardeners' Chronicle* will be able to say whether these latter have arisen through bud variation, somewhat after the fashion of the above case, or through variation in seedlings. *J. Parkin, Blithwell, Carlisle.*

RETROGRADE SELECTION.—Whilst to an ordinary gardener what Mr. F. Galton proposes to do in relation to tracing back the development of a garden plant of some annual description to its origin seems sheer waste of effort, no doubt it will present interesting experiment to the student in plant evolution [and by no means without value

Begonia? because all these have been evolved out of very inferior origins. *D.* [No plaut of hybrid origin is available. Ed.]

BRAMLEY'S SEEDLING AND LANE'S PRINCE ALBERT APPLES.—A good deal has already been written about the relative and comparative merits of these two Apples. Through the kindness of Mr. Merryweather of the Southwell Nurseries, I have had the opportunity of tasting or re-tasting both to-day, May 12. A correspondent on May 1 assured us that Bramley's Seedling was a fine cooker, but very sour. We did not find it the latter at all; but the same correspondent wrote that Bramley's Seedling did not keep till after Christmas, and yet here we have just eaten it in splendid condition on May 12. Neither can I endorse the opinions of other correspondents, that the quality of Prince Albert is equal or superior to Bram-

it may prove useful to give Dr. Hogg's estimate of these two Apples in his latest edition of the *Fruit Manual*. "Bramley's Seedling: fruit large, 3½ inches wide and 2½ inches high, handsome, and at first sight resembling a Blenheim Pippin. It is oblate, even in its outline, and with fine, rather distinct knobs at the crown; skin very much covered with a tinge of pale red, which is much striped with darker red, and where shaded the ground colour is yellow; eye rather open, with erect segments, which are reflexed at the tips, and set in a wide, round, saucer-like basin; stamens median, tube funnel-shaped; stalk very short, sometimes a mere knot; flesh with a yellowish tinge, tender, and with a fine brisk acidity; cells round, axils open. A very valuable cooking Apple in use till January;" and Dr. Hogg adds, "it is a Nottinghamshire Apple, and was sent me by Messrs. Merryweather & Son, of Southwell!"

One is amazed at the truth of the description of Lane's Prince Albert: "Fruit large and handsome, $3\frac{1}{2}$ inches wide and $3\frac{1}{2}$ inches high; short, conical or ovate, even and regular in its outline, with broad obtuse ribs round the crown; skin smooth and shining, fine grass-green at first, but changing to clear pale yellow as it ripens; where exposed to the sun it is pale red marked with broken streaks of bright crimson; eye rather small, close, with erect pointed segments which are reflexed at the points, set in a deep saucer-like basin; stamens basal, tube funnel-shaped; flesh tender, juicy, briskly and agreeably flavoured; cell elliptical, axile, cord-like." Dr. Hogg adds, a very excellent culinary Apple for October to March. It was raised by Messrs. Lane & Son of Berkhamsted. The tree is a marvellous bearer, and rarely fails to

other crops, contiguous to express and other railways, one can easily read between the lines his anxiety to console artists, landscape gardeners, and lovers of nature, who may have failed to establish bracken. Virtually, and in his most sprightly manner, he proceeds to point out how very much they may have gained in safety, and in profit, through their failure to brackenize their woods and landscapes. And it would be difficult to place a more vivid anti-bracken object-lesson in your pages than that of the late, deeply lamented Mr. Findlay, of the Manchester Botanic, struggling to the waist or neck in a veritable maize or tangled sea of bracken; the vision will probably suffice to give pause to the most bracken-stricken enthusiast. And yet, possibly few landscape gardeners would regret indiscriminate raids on bracken more than Mr. Simpson, surrounded, almost

the roots early in April, will kill the major part of them. But it cannot be helpful to wage a war of extermination, to say nothing of extermination, against bracken. Mr. Simpson's spark-guards on funnels would prevent the firing of bracken and other crops, timber-yards, &c. The besting back of such crops from the sides of the line would also do much in the same direction. The early cutting or harvesting of bracken would reduce the risk of fire to nil, for bracken is by no means inflammable till dead ripe. Cutting the crop before this stage of perfect maturity would also improve its fibre for paper-making, and possibly for other trade purposes, as well as greatly improve bracken for the bedding of live-stock, and the protection of fruit-blossoms, Roses, &c. In some of our best nurseries nothing else but sprays of bracken have been used for the protection of Tea and other



FIG. 122.—MAPANIA PANDANIFOLIA (CYPERACEÆ).

(Exhibited at the Temple Show by Messrs. F. Sander & Co. See *Rej. cr.*, p. 353.)

produce a crop. Singularly enough Dr. Hogg fails to name the stalk, which is long and slender, and turned to one side. D. T. F.

HOW TO DISESTABLISH BRACKEN.—I have seldom enjoyed an article more than that of Mr. Simpson, of Wortley, on the above in a recent number of the *Gard. Chron.* There was a freshness about it born of the woods of bracken so vividly described. No doubt, under such fiery conditions as environ the woods of Wortley, dried bracken may at times prove a huge tinder-box to set the woods and forests in a blaze; and hence Mr. Simpson's vigorous protest against fringing our railways, canopied with streaming comets of red-hot sparks, with powder-dry bracken in autumn tides, unless taking due precautions to confine the fire-showers to the barren track of the line, or beating back or cutting down the bracken to a safe distance. While doubtless Mr. Simpson's main object in writing was to ensure the greater safety of plantations, ripe corn, hay, and

honeycombed, with railways, as many of the plantations and pleasure-grounds in the North are, it was doubtless his duty to call out fire at every sign of wider risk or of fresh danger. Neither will anyone who knows Mr. Simpson, accuse him of exaggerated views of the vigour of the bracken, its tinder-like inflammability, or the speed and energy of its combustion. The only match, or rather master, in speed and intensity of heat that I have met with was found in a mixture of bracken and pampas-grass. A match was set to a group on a hard dry March day, and in an instant the whole was in a fierce blaze, and a very expert movement was needed to save clothes and a severs scorching. The bone dry pampas went off more like an explosion than an ordinary fire. Dry bracken burns almost as swiftly, but nothing like so fiercely. I fear there is no easy way of getting rid of bracken. In woods, the roots of the trees prevent steam-ploughs, smashers, &c., working with much effect or freedom. On poor Heath-land in the open, such implements, or forking, or diggi-ou-

tender Roses for years; the lightness, mobility, toughness, and durability render it the most effective wall-screen in fruit blooming time, also the safest shelter to all semi-tender Roses. Bracken is also a capital protection to early Potatoes, Peas, Beans, Lettuces, Parsley, &c. Unless the paper-mills will take all Mr. Simpson's early harvested and tough fibred bracken, possibly he might be able to put a few hundred tons on the rail at fairly remunerative prices for protective and bedding purposes. If harvested sufficiently early, there would be no fear of the spores converting our fields and gardens into wildernesses of bracken. Room enough and to spare may mostly be found on all estates for fine groups and tangles of bracken without injury to young woods. Few could see masses or crowded plantations of this finest of all our native Ferns, not omitting the *Osmunda regalis*—I mean the common bracken, *Pteris aquilina* in many varieties, with its brownish lush-green fronds, tender and crisp, about 3 inches high, or its stout, wide, creeping rhizomes, without

recalling some old-world superstitions or facts of these juicy leaflets and stems being esteemed as good for food, and that the glutinous rhizome of the closely allied species, *T. aculeata*, is still eaten by the aborigines, and known as the edible Fern of Tasmania-to-day. When some new chef shows us how to cook and eat our bracken shoots and roots in safety, and our manufacturers convert their fibre into good paper, possibly the Wortley bracken, now condemned as dangerous and useless, will rank as a profitable crop, as well as stand out more prominently than ever as a thing of beauty and a joy for ever. Early in the twentieth century it is hoped Mr. Simpson will be able to chronicle the effects of the renaissance of our old excellent Fern on the popularity and prices of our native Asparagus. *D. T. F.*

PROGRESS OF THE CYCLAMEN.—The editor has done me the honour to reprint in his pages the paper read by me before the Royal Society. No doubt, to save time, he has supplied, for the most part, his own illustrations. They will serve, though I think those given in the original paper, which were carefully drawn, to show the dimensional changes in a more convincing manner. But I must disclaim all responsibility for fig. 114, which is entitled the "Crested Cyclamen," and cited on p. 331 as representing the "Duch Hill Pioneer." It does not do so, but was avowedly the product of the artist's fancy, and a conjecture as to what might be, not anything that so far actually exists. *W. T. Thistledown-Dyer.* [We regret that by an inadvertence the wrong block was used; the correct one will be found in our number for January 30, fig. 13 A, p. 70. Ed.]

KEW GARDENS.—In taking a quiet look over the externals of Kew Gardens the other day, for I did not visit the houses, I endeavoured to enjoy them very much as an absolutely unprofessional person might be expected to do who had an innate love of the beautiful. Possibly it is difficult to do so, as the professional Adam will crop up in the breast of the best of us, and the tendency to criticise will assert itself; yet, in spite of this irrepressibility, I could but enjoy the gardens most truly. So beautiful and so well kept, for here again the gardener will always be, were they that I fear would leave criticism to rest, and thought only of the delightful surroundings. Really, looked at from the purely uncultured visitor's point of view, it seems almost impossible to find anywhere near town or in the country such a delightful place as Kew is. Such noble trees, such beautiful flowering ones, such remarkable collections and combinations of shrubs, such lovely glades, such charming expanses of verdure, such music of birds, such soft sweet air, and all so near to London, with its noise, its smoke, and its hurry and drive of life. Poets and writers make the praise of rural scenery, and much of it is indeed beautiful, but millions of British people visiting Kew on a warm sunny May day, would aver that the gardens were the loveliest they had ever seen. All this is after all more of garden praise than of scientific work, but the present management have in a remarkable degree shown how science in the form of botany and horticulture as exemplified in the creation of that which is beautiful in gardening, can go hand in hand. After all, it is only those who see Kew that can fully realise what the gardens really are. *A. D.*

EEL-WORMS IN PASTURES.—If "A Novice" will kindly refer to the enquiry of "M. F.," in the *Gardeners' Chronicle* of May 1, p. 296, he will see that the eel-worm mentioned is *Tylenchus devastatrix*, which is exceedingly mischievous, and spreads with great rapidity. I had doubts as to the pest being *T. devastatrix*, so recommended a manurial mixture which I knew would greatly benefit the pasture, and doubtless assist the plants in overcoming the pest if it did exist. "A Novice" will see that the reply states—the treatment will not entirely destroy the pest. In fact, if "A Novice" has had any experience with *T. devastatrix*, he will know full well that it is extremely difficult to eradicate when once established; and I repeat, that turf known to contain this pest should not be used for potting purposes. Miss Ormerod says:—"It should be borne in mind that eel-worms can be conveyed in infested earth. They are thus conveyed on wheels of carts, in carting lime to farm implements, and to garden tools, and even below the boots of farm-labourers; and from their power of propagation, a small beginning makes much trouble." Doubtless a chemical agent might be found which would destroy *Tylenchus*, but this would mean destruction of the growing plants also. When dealing with crops or delicate plants, it is not

easy to destroy an established pest without injury to plant-life also; therefore I say try remedies and watch the results. So far as I know there is no *Tylenchus devastatrix* in this neighbourhood at the present moment, and we do not wish to import any; consequently cannot carry out the experiment "A Novice" suggests. If gardeners when they are troubled with injurious insects or fungoid diseases would try certain remedies and watch the results, reporting success or failure, in this or in similar journals, they would be doing good work. I shall be interested to learn the remedies which "A Novice" says have been found successful in combating with *Tylenchus devastatrix*, and I am sure Miss Ormerod would also. This talented lady and Dr. J. Ritzena Bos, director of the Phyto-Pathological Laboratory at Amsterdam, a great authority on this kind of infestation, have been working for several years past on this and similar subjects. *J. J. Willis, Harpenden.*

LILIUM THOMSONIANUM.—In alluding to *Lilium Thomsonianum*, Royle in his *Illustrations of the Botany*, &c. of the *Himalayan Mountains*, vol. 1, p. 381, 1839, says:—"I have named this species in honour of my friend, Dr. A. T. Thomson, Professor of Materia Medica in University College, author of lectures on botany, 1822." *J. E. T. A.*

A FINE DENDROBIUM FALCONERI.—I send for your inspection a photograph of a *Dendrobium Falconeri*, grown at The Mount, Castlehead, Paisley, by Mr. Matthew Strong, the gardener at that place. It possesses eighty-two flowers. Towards the end of the month of September it is taken into a cool greenhouse and rested there until it shows its flower-buds—generally about the beginning of April, when it is taken into the intermediate-house. In most *Orchid Manuals* it is recommended to be grown in strong heat; but Mr. Strong has grown this in an intermediate-house, which he finds the most suitable for the plant. *Robert Macfee.* [The photograph shows a pretty plant, but it is, unfortunately, unsuitable for reproduction. Ed.]

PREMATURELY-DUG BULBS.—Your correspondent, Mr. Earley, p. 341, does well to call attention to the manner in which that clever gardener, Mr. Jordan, the superintendent of the Regent's Park, prepares and stores his bulbs for spring bedding. I once had the pleasure of looking round" with Mr. Jordan, and the only thing I can compare his store to was the old florists' Tulip stores, when single bulbs of some kinds were worth £50 a-piece, such was the order and care, and their skins shone like the finest Dutch bulbs. Perhaps Mr. Jordan would himself describe his method of drying and ripening the bulbs? *R. M., Newbury.*

THE WEEK'S WORK.

THE ORCHID HOUSES.

By W. H. WHITE, Orchid Grower, Burford, Dorset.

Water for Orchids.—Without any doubt the health of Orchids, when under cultivation, depends upon the quality of the water afforded, the time, and the manner of its application. It is now pretty well known that rain-water is the best for these, as for every other species of plants, and as such as possible of that which falls on the houses, sheds, &c. should be led to underground tanks and house-cisterns, other means being taken to supplement the water supply in periods of drought, adding some occasionally to the rain-water, and thus eking out the quantity. A sufficient quantity of pure rain-water should be set aside for syringing purposes, other kinds of water leaving a deposit of some sort on the pseudo bulbs and leaves, which stops up the stomata, and is unwholesome. River-water is generally preferable to that from underground sources, but where the latter is obtained, this should be exposed to the air in open cisterns for some time before it is used. A tank in one or two of the warmest houses should be provided with a hot-water pipe of small dimensions laid round the tank, and as near to the bottom as possible, with valves on the outside to regulate it. This is not recommended with the object of increasing the humidity of the air, evaporation by this means being productive of the dreaded "spot"; moreover, evaporation from this source is dangerous to the health of the plants generally when the temperature of the house is much below the proper standard. At this season, and during the summer months, the temperature of the water for watering the plants in the East Indian-house should be about 66°, and in the autumn it should be reduced to about 63°, and in very cold weather to 60°.

For the Cattleya, and other intermediate-house plants, the temperature of the water should be reduced several degrees below these figures, and for *Oncotoclossums*, *Mastadenias*, *Oncidium*, and other cool-house Orchids, it should be as warm as the night temperature of the house. Affording water, syringing, dousing, &c., will take up much of the cultivator's time during the next three months.

THE FLOWER GARDEN.

By CHARLES LISBARRIS, Gardener, Droppore, Malabar.

Bedding Out.—Spring bedding plants will now have to be lifted to make room for those about to be planted. If during the winds and fine weather continue, extra care will be required in transplanting, in order to preserve the stock for another season. *Primroses* and *Polyanthus* may be divided, and afterwards planted at about 6 inches apart each way on a shady border. Here they will develop into good clumps ready for transplantation in the autumn of the following year. *Pansies* and *Violas* should be laid in temporarily in drills, and these and all other subjects must be well supplied with water when necessary.

Tulips and *Narcissus*, if they are to be planted again, must be lifted with all the soil that hangs to them, and laid in trenches in the reserve garden, and if allowed to ripen off naturally, the bulbs will not seriously suffer; and as soon as the tops wither and can be bent without snapping, they should again be lifted and spread out to dry in a cool shed preparatory to cleaning and storing.

Narcissus poeticus and *Jonquils* may be lifted, and after the beds have been dug and manured, the bulbs may be planted back in patches of five or six, at 9 inches apart, selecting the largest bulbs. The top, if twisted into a knot, will not be in the way, and providing the beds are to be planted with *Pelargoniums* or similar plants, these are easily planted between, and when cleared off in the autumn the bulbs have made a good start. Several beds are annually treated in this way here, and the bulbs flower satisfactorily.

Wallflowers.—To produce good stocky plants for next season's flowering, the present is a good time to sow the seeds. In light soils, a north border forms a suitable position for the seed bed, and in any case a cool and partially-shaded spot is desirable. After the soil has been raked down and the surface made fine, draw shallow drills 9 inches asunder, and in these sow the seeds thinly. The seedlings may be thinned and left to grow large, or they may be transplanted to about 8 inches apart, as soon as they have formed three or four leaves. If it be a dry time, afford water to the drills with a fine-rosed can a short time before sowing the seeds. *Veitch's Blood Red* and *Belvoir Castle Yellow* are good strains of dark and yellow *Wallflowers*. *Fairy Queen* or *Primrose Dame* is a pleasing *Primrose* colour, but it lacks fragrance. *Sturton's Earliest* and *Earliest* are early-flowering varieties, and a fair proportion of double flowers may be obtained from a selected strain of the *Double German variety*.

Canterbury Bells.—Seeds may be sown now, similarly to *Wallflowers*. *Campanula pyramidalis* and *C. p. alba*, and the perennial varieties, may also be grown in this way out of doors.

THE KITCHEN GARDEN.

By W. FORT, Gardener, Highclere Castle, Newbury.

Spinach.—If a regular supply of fine *Spinach* is demanded by the family, a sowing should be made once a fortnight, the plant bolting quickly, even when thinned early. If a mild or disused hotbed be available, seeds of the *New Zealand Spinach* may be sown, and as a few plants of this soon covers a good space, and will yield many pickings of thick succulent leaves, a few plants will usually suffice for the needs of a large establishment. *Orach*, or *Mountain Spinach*, may also easily be grown, and should be given a trial where ordinary *Spinach* fails, as it sometimes will, on dry hot soils.

Late Broccoli.—The *Late Broccoli* is now coming in place, and notes should be taken of new varieties to serve as a guide in the future. That well-known old variety *Carl's Eclipse*, is still one of the most trustworthy, and *Sutton's Late Queen*, and *Veitch's Model*, are also very superior *Broccoli* at this season. If seeds of these varieties have not yet been sown, no time should be lost, strong and well-matured plants being required to withstand the inclemency of an ordinary winter, and all crowding in the seed-bed, or afterwards, should be avoided.

Tomatos.—The out-of-doors plants require a rich but firm soil, and a sunny position either on or in front of a wall after planting. Afford water freely till the roots have seized upon the soil; apply a slight strawy mulch, and stake and tie the stems securely. If a stimulus to growth be required when the plants are in bearing, let it be in liquid form. Plants growing in the open air are the best when kept to one stem, all laterals being removed as fast as they appear. Tomato plants standing in the open should be stopped at 3 feet from the ground; and, given a warm summer and well-prepared plants, heavy crops of fruit are obtained.

FRUITS UNDER GLASS.

By F. HARRIS, Gardener, Eastnor Castle, Leicestershire.

The Early Vinery.—The Grapes in this vinery, if the Vines were started in December, should now be in process of colouring, a stage at which the Vines should be freely afforded air to ensure good colour,

Succession Vinerics.—The Vines in these vinerics, the thinning being finished, will require much attention in regard to the stopping of the laterals, keeping the borders, if inside, in a proper condition as regards water, and damping of the paths and surfaces generally. Aged Vines carrying a heavy crop of bunches, will be greatly benefited by liquid-manure mixed with hot-water, so as to make it tepid, copiously afforded to the borders when the latter are in need of moisture. Careful ventilation is very necessary at this season of sudden bursts of sunshine and cold winds, or evils of various sorts will be met with. Afford air in small amount as soon as the warmth begins to rise in the morning, gradually increasing it till the maximum is reached for the day. By affording air at this season as much as possible by the upper ventilators or lights, the impinging of cold draughts on leaves and bunches will be avoided. Never open ventilators all at once to a great extent, this being a fruitful cause of mildew, rust, &c.

to shelter itself in cracks and crannies in the bark, wood-work, courses of the brickwork, in the cell beneath the hot-water pipes, consequently the gardener will do well to keep as much as possible all such places well moistened daily either with clean water or manure-water, and if sulphur be intimately mixed with such swill-water, much good will be done. ED.]

PLANTS UNDER GLASS.

By G. H. MAVORCOC, Gardener, Luton Hoo Park, Luton.

Richardias.—In order to keep up the supply of spathes from November till late in the spring, two methods of cultivation are called for. For the plants to produce early spathes, they should be rested at this season, removing them for this purpose to a half-shady place out-of-doors, and gradually withholding water; and when the leaves are decayed, turning them on their sides, and if necessary, piling the pots on one another. In this condition, they may remain till the first week in August, when the tubers should be shaken out of the pots, the offsets removed, and the main roots repotted with a moderate degree of firmness in a mixture of loam, leaf-soil, sand, and some horse-droppings rubbed through a 1/4-inch sieve. Stand the repotted plants in a cold-frame, and place in the greenhouse in September or early in October. For the main supply of spathes, I rely on those which are planted out in shallow trenches, as for Celery. In these trenches is put a compost consisting of loam, leaf soil, and short-dug, in equal parts, thoroughly mixed together. The plants are taken out of the pots, three-fourths of the old soil shaken off, and all of the offsets removed, and the mass of roots planted 2 feet apart in the trenches, and copious applications of water afforded. Beyond keeping the trenches free from weeds, but little else is needed, unless the season be a dry one, when an occasional watering will be necessary. Early in September, a bright, clean spade, should be pushed down by the side of the plants, 6 inches from the base, in the form of a circle, preparatory to lifting them about the end of the month.

Cyclamens.—The final shift will now be needed by these very pretty, useful plants. Seedlings raised last autumn should be potted in 4 1/2's and 3 1/2's, the strongest tuber going into the larger size of pot. See that the drainage of the pots is well done, always placing a handful of finely-broken crocks over the larger crocks. The soil used at the time should consist of equal parts rich loam and leaf-mould, with plenty of sand added. The tubers should not be placed deeper in the soil than three-quarters of their diameter, and this potting should be done with moderate firmness. The re-potted plants may be stood in a warm pit or low house close to the glass; and if round about the pots, common moss be placed to the depth of 2 inches, a general degree of humidity will be maintained round about them. A temperature of 60° by night, and 65° by day, and shading from bright sunshine, should now be afforded them.]

THE HARDY FRUIT GARDEN.

By H. W. WARD, Rayleigh, Essex.

Young Plantations of Gooseberries and Currants.—The soil between rows of Gooseberry and Currant cuttings (as well as young plants that were struck last year), which were transplanted in rows wider apart last autumn or spring, should be kept well stirred with the Dutch-hoe. The frequent loosening of the surface-soil between young trees, and garden crops generally, serves in a great measure to compensate for a deficient rainfall during April and the four following months. Unless a free use be made of the Dutch-hoe between rising crops during dry weather, the soil, by reason of the combined influence of heat and drought, becomes baked and cracked in more or less degree, and afterwards requires a digging-fork to break the surface, in order to prevent the parabolic influence of the sun and air reaching the roots through the fissured land, and at the same time preparing the soil for the reception of rain.

Miscellaneous Work.—Water wall-trees at the roots and wash Peach trees overhead with clean water in the afternoon. Thin and pinch off the young shoots, and drain the trees, in order to prevent the thinning out crops of Apricots and Peaches in the manner recommended in a previous calendar. In the case of robust-growing Pear and Plum trees which have set heavy crops of fruit, thin the clusters of fruit a little, and in proportion to the number left, so will be the size of the fruits be small in size.



FIG. 123.—OLEARIA STELLULARIS: HARDY WHITE-FLOWERED SHRUB. (Exhibited by Messrs. Veitch & Sons at the Temple Show. See Report, p. 353.)

while the amount of moisture should be reduced. If the border lacks moisture, which should be ascertained by the test-stick or a hand-fork carefully used, a thorough application of tepid water, sufficient to moisten it to the bottom, should be afforded. Be careful, however, to afford no water to the soil if it be moist enough for the needs of the Vines, or shanking of the berries will probably occur. If any shanked berries become visible in the bunches, remove them, and thus allow the remaining fruits to fill up the vacant space. Cleave the vinery moderately early if the ripening of the fruit must be hastened, and in the evening—say, at 7 o'clock—a small amount of air should be admitted at the apex of the vinery. Foster's Seedling and other white Grapes need as much direct sunlight as may be allowed without causing the scalding of the berries.

Late Vinerics.—The Vines in most late vinerics are now in blossom, or they have set; if the former, the same kind of treatment should be afforded as that I have previously advised; and if the latter, let the worthless or badly-set bunches be removed, and a day or two afterwards thin the bunches to the number the Vine or Vines can perfect—and so far as may be pretty equally divided over the Vines. See that all bunch-bearing laterals are properly secured to the wires; and keep all other lateral growth in check by removing them by degrees, not cutting out a large number of them at one time, and thus injuriously checking the growth of the plants. Let the borders, paths, and walls be well damped once or twice a day, and sprinkle manure-water on the paths the last thing in the evening, which is inimical to the dreaded mite (Tetranychus telarius) Red-spider. [This insect appears

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY,	JUNE 1	Devon County Agricultural Society's Show (3 days).
THURSDAY,	JUNE 3	Linnean Society.
FRIDAY,	JUNE 4	Royal Botanic Society's Lecture.
SATURDAY,	JUNE 5	(Sec. Franc. d'Hort., London, Isle of Wight Horticultural Society meet.)

SALES.

TUESDAY,	JUNE 1	Imported and Established Orchids, at Prothero & Morris' Rooms.
FRIDAY	JUNE 4	Imported and Established Orchids, at Prothero & Morris' Rooms.

AVERAGE TEMPERATURE for the ensuing week, deduced from Observations of Forty-three years, at Chiswick.—58° 6°.

ACTUAL TEMPERATURES:—

LONDON.—May 26: Max., 60°; Min., 51°.

PROVINCES.—May 26 (6 P.M.): Max., 55°, The Scaw; Min., 49°, Sunninghead.

The Temple Show.

As we write the rain is falling gently enough, we will hope, to satisfy the needs of the gardeners without interfering with the success of the Temple Show, which is in progress as these pages are passing through the press. The show itself is larger than ever, if that be possible within its narrow limits. We are inclined to say it is better than ever. It certainly is so in some respects. It is less crowded, more refined, the general quality is higher, and it is exceptionally rich in examples of good culture. Extensive elimination has taken place, and thus a better view of the plants is obtainable, and there is less reiteration of common subjects. In a word, it is more choice. Owing to the comparative absence of crowding, the general effect is superior; but there is still a monotonous flatness, and a lack of those imposing groups which render the continental shows so remarkable.

Of absolute novelties there are not very many. The most striking new plant is a large-flowered variety of *Hydrangea hortensis*, shown by Messrs. JAMES VEITCH & SONS, the leaves of which are very large and dark green, and the barren flowers are over 2 inches across, and of a bright rosy-red colour. We hope to figure this next week. Messrs. F. SANDER make a fine display with various species, some of which are figured in the present issue. Among Messrs. SANDER's plants are *Draecena Godseffiana*, like a climbing *Acubia*, with its spotted leaves and red berries; *Anthurium bogotense*, with deeply cordate, three-lobed leaves, the central one prolonged into a long, spear-like point. *Caladium albanense*, with narrow spear-shaped leaves, wavy at the margins, and of a dull red colour.

Canna indica variegata, said to be imported from the Solomon Islands, has the leaves striped with cream-yellow. The collector says the plant is even more striking than *Heliconia illustris*.

Mapania pandanifolia is a sedge-like plant, with arching green leaves, 2 feet long and 1½ inch wide. When full-grown, it is said to be 4 feet high. *Philodendron imperiale* var. *Lauchena* is a scandent species with ovate cordate leaves, 6 to 9 inches long, bright green, heavily mottled with milky-grey.

Petunia Mrs. Fred. Sander has large full flowers, 4 inches across, and nearly as deep, the colour rich rose-red, the flowers suggesting *Malmalson Carnation*. A white-flowered double *Petunia*, named Mrs. J. Jefferies, is also of *Carnation*-like appearance.

Davallia hirta var. differs in habit from the type, and promises to be a useful decora-

tive Fern for the warm conservatory. It is the only plant that obtained a First-class Certificate from the Floral Committee. SANDER's *Streptocarpus* are remarkable for the large size of their flowers. *Arisema Bakerianum* is a nearly ally of *A. fimbriatum*, but is smaller, with green and brown unstriped spathes, and a hairy spadix.

Rhipsalis salicornioides is a queer-looking Cactus with drooping glass-wort-like branches, and small yellow and orange flowers. *Astibe Lemoinei* *Gerbe d'Argent* is a variety with rose-tinted flowers.

Clematis Marcel Moser, shown by MOSER of Versailles, has flowers 8 inches across, with numerous spreading segments coloured pale rose, with a broad band of cerise down the middle of each.

Mr. W. BULL, Chelsea, showed *Ficus radicans variegata* with silvery variegated leaves, suggestive of those of *Euonymus radicans*. He also showed *Anemina rotundifolia*, a new introduction with pinnate fronds 2 feet long, each bearing about ten pairs of ovate pinnae, the largest 1½ inches long. *Crimum Moorei variegatum* is a new plant of last year with leaves variegated with cream-yellow.

Phylloceati are making progress in popularity, thanks to the efforts of Messrs. VEITCH, who have raised many new seedlings, a selection of which were shown, two of them obtaining Awards of Merit.

Streptocarpus were shown, the three sections, *gratus* (Watsoni), *pulchellus*, and the *Rexi* group being better than we have ever seen them.

Messrs. WALLACE showed several new forms of *Calochorti*, *Iris Hartwegi*, *I. lupina* (Award of Merit), *I. Korolkowi*, *I. Gatesi*, and *Brodiaeas*, and an interesting set of hardy *Cypripediums*.

Orchids have, we fancy, been shown more numerous but scarcely more finely on other occasions. The exhibition of these plants is of the first-class order for interest and beauty, and there are one or two gems of the first water.

Roses are marvellous: the groups of Messrs. TURNER, W. PAUL & SON, PAUL & SON, MOUNT, among others, are specially worth the attention of the connoisseur. Messrs. W. PAUL & SON show in addition three new varieties, *Empress Alexandra* of Russia, a peculiar orange-salmon colour; *Sylph* and *Medea*, a pale creamy-sulphur colour. Messrs. VEITCH have a mixed group of great beauty, with noble spikes of *Eremurus* arising from a background of *Azaleas* and *Lilies*—and we know not what.

Caladiums are shown in fine condition by Messrs. PEED, LAING, VEITCH, and others, and constitute one of the specialties of the show.

Messrs. CANNELL & SONS distinguished themselves by a group of *Cannas*, the brilliancy of whose colours defy reproduction by any process at our command.

Gloxinias are shown in splendid state by Messrs. SUTTON & SONS, LAING, CANNELL, CARTER, and PEED. Messrs. DOBBIE surprise us with *Dahlias* in May, and Messrs. VEITCH show a curiosity we should be glad to see again—*Campanula Balchiniana*—said to be a hybrid between *C. isophylla* and *C. fragilis*, and having long-stalked ovate leaves, toothed at the margins with a green disc, and a creamy margin.

There are several rockery groups to which special attention should be paid for their beauty, viz., two from Messrs. BACKHOUSE, one from Messrs. CHEAL, in which the rocks wanted more covering; one from the Guildford Hardy

Plant Nursery. These are delightful features, but it is impossible to describe them at length.

There are some other groups more patriotic than tasteful. A beautiful arch of *Asparagus* is ruined by a cockney crown of everlasting at the top; and of another display of a similar character perhaps the less said the better, after we have given due credit to the excellent intentions of the designers.

Outside, Messrs. FISHER, SON, & SIBREAY, have a remarkably fine group of Japanese Maples and other hardy shrubs.

Messrs. BARR & SONS showed a huge leaf of *Gunnera manicata* as big as a good-sized leaf of *Victoria regia*, but in its appearance highly suggestive of *Rhubarb*.

Fruit and vegetables were not largely shown, but the quality was excellent.

Of foreign exhibitors, whom we always like to see on such occasions, we may note Messrs. LINDEN, PIRET, MOSER, JULES HIVE, and PEETERS.

Notwithstanding the rain which fell during Wednesday, we are pleased to hear that the receipts taken upon that day exceed those taken upon the opening day at any of the nine previous shows.

The Exhibition was honoured by a visit from H.R.H. the Princess of WALES, H.R.H. the Duke of YORK, Princess CHAS. of DENMARK, and Princess VICTORIA. The Royal party were received and escorted through the marquees by Sir TREVOR LAWRENCE, Bart., and several members of the Council, and remained in the gardens for three-quarters of an hour. On Thursday morning the show was visited by Sir WM. HARCOURT.

The arrangements throughout appear to have worked most smoothly, and though the space allowed each exhibitor was considerably less than that asked, we have heard of no unpleasant incident. The bulk of the work has fallen upon the Rev. W. WILKS, Secretary of the Society; Mr. J. WEATHERS, Assistant Secretary; Mr. S. T. WRIGHT, Superintendent of the Gardens at Chiswick, and his assistant, Mr. T. HUMPHRIES.

LINNEAN SOCIETY.—An evening meeting will be held on Thursday, June 3, 1897, at 8 P.M., when the following papers will be read:—1, "Observations on *Termites*," by Dr. G. D. HAVILLARD, F.L.S., &c. 2, "On the Genus *Ramalina*," by Prof. T. REPERT JONES, F.R.S., and F. CHAPMAN, F.L.S., &c. A rare Crustacean from Tasmania (*Anaspides tasmanica*), by Prof. G. B. HOWES, F.L.S., &c., will be exhibited.

NATIONAL VIOLA SOCIETY.—The first meeting of the Floral Committee was held in the Reading-room at the Royal Botanic Society, Regent's Park, on Wednesday, the 19th inst. Owing to the early date and untoward season only a few *Violas* were staged, the only one gaining a Certificate being "Eudynion," a pale yellow, superb bloom of this variety being staged by Mr. W. BAXTER, Woking.

A COURSE OF BOTANICAL LECTURES is being delivered at the Apothecaries Hall, Blackfriars, E.C., by Professor OLIVER, of University College. The course deals with the diseases of plants, and the subject of the first lecture, delivered on Tuesday afternoon, was "The Plant in Health and Disease." The remaining lectures will be delivered on consecutive Tuesday afternoons at 8.30, and will treat of "Witches' Brooms," "Some Diseases of Cereals," and "The Diseases of Timber."

BRIGHTON AND SUSSEX HORTICULTURAL SOCIETY.—The monthly lecture in connection with this Society was delivered by Mr. R. DEAN at the Oddfellows' Hall on the 20th inst., the subject being, "The Gooseberry, its History, Types, Cultivation, &c." The chair was taken by Mr. MILES. There was a numerous attendance, and the lecture well received.



FIG. 124.—CALADIUM RONCADOR: DARK ROSE, WITH BLACK AND GREEN VEINS.

(From a photograph, by J. Gregory.)

(Exhibited at the Temple Show by Messrs. J. Peed & Sons. See Report.)



FIG. 125.—NEW DWARF CALADIUM THOMAS PEED: BRIGHT ROSE, WITH CARMINE VEINS;
MARGINS SUFFUSED GREEN.

(From a photograph by J. Gregory.)

(Exhibited at the Temple Show by Messrs. J. Peed & Sons. See Report.)



FIG. 126.—DOUBLE BEGONIA DUCHESS OF MARLBOROUGH: ROSE OR SALMON-PINK.

(From a photograph by J. Gregory.)

(Exhibited at the Temple Show by Messrs. J. Laing & Sons. See Report.)



FIG. 127.—SINGLE WHITE BEGONIA LADY HAMILTON.

(From a photograph by J. Gregory.)

(Exhibited at the Temple Show by Messrs. J. Laing & Sons. See Report.)

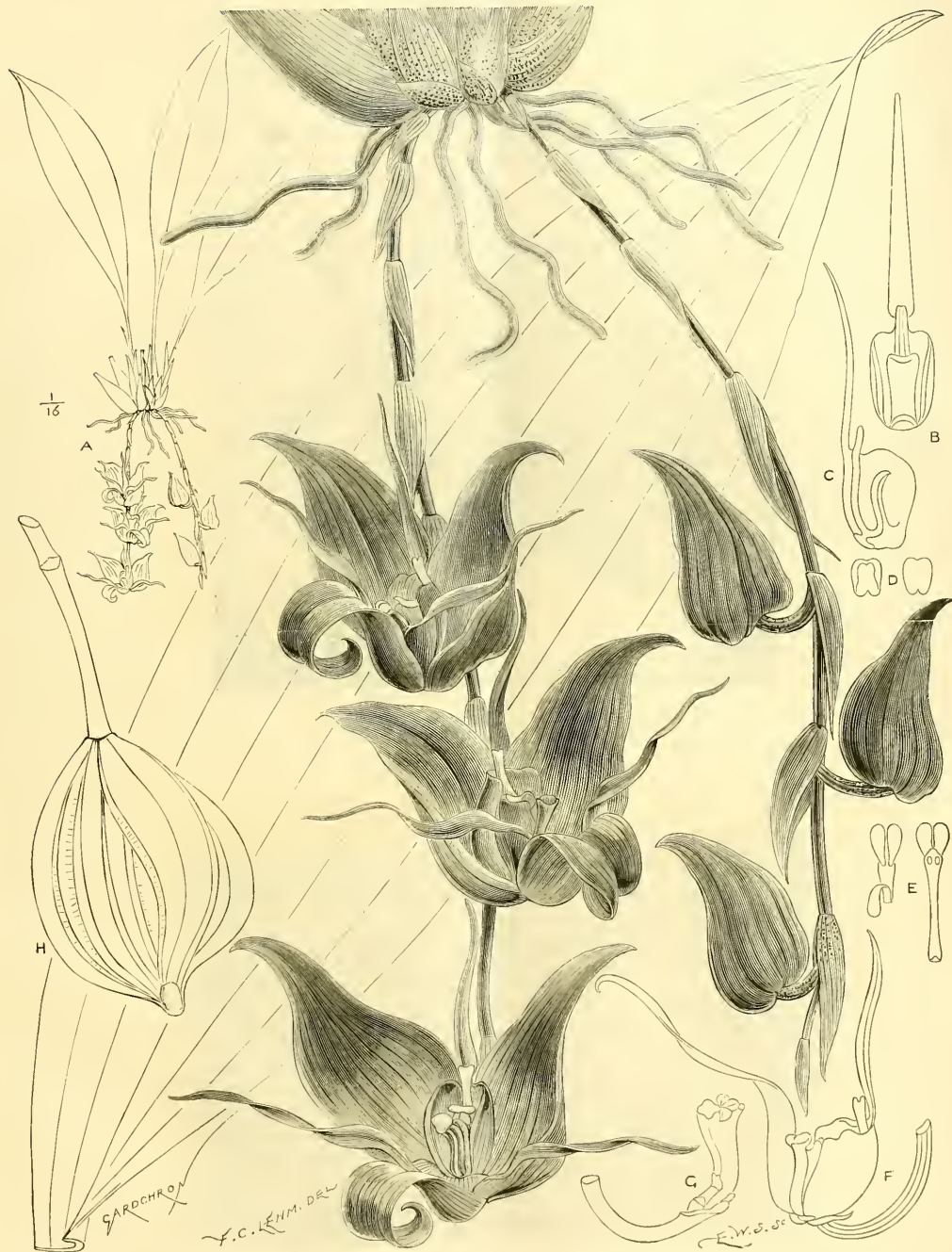


FIG. 128.—TREVORJA CHLORIS: FLOWERS GREEN. (SEE P. 345.)

A, plant reduced to show habit; B, C, lobes of the lip; D, anther-caps; E, pollinia and caudicle; F, lip detached (seen from the side); G, clinandrium; H, capsule.



FIG. 129.—GLOXINIA PRINCE OF WALES.

(From a photograph by J. Gregory.)

(Exhibited at the Temple Show by Messrs. H. Cannell & Sons. See Report.)



FIG. 130.—GROUP OF FIBROUS-ROOTED BEGONIAS.

(From a photograph by J. Gregory.)

(Exhibited at the Temple Show by Messrs. Sutton & Sons. See Report.)

instead of the leader *Acer Negundo* variegatum, which it greatly resembles in general appearance; *Betula* purpurea, noted in well-coloured examples. The *Twee Ives* are excellent for covering bare spaces under trees, relieving the monotony of the common Ivy, and for fruiting beds.

Mr. H. HOWELL, King Street, Hamersmith, had a small group of *Ferns* and *Palms*.

The GULDFORD HARDY PLANT NURSERY Co. had a background of *Conifers* and other plants, and a fore-ground of an Alpine garden planted with many subjects. Chief among them *Androsace*, *Anemone*, *Arenaria*, *Abrietta*, *Cypripedium*, *Diandra*, *Erigeron*, *Gentiana*, *Lithospermum*, *Melilotis*, *Hamonia*, *Claytonia*, in variety; *Veronica*, *Viola*, &c.—a charming feature well worked out.

Messrs. BACKHOUSE, of York, had also a delightful group of alpinas, artistically arranged.

ORCHIDS.

That the show of Orchids was one of the best seen at the Temple was the opinion of connoisseurs, and the remark, well merited by the show in general, was applicable to the highest degree to the splendid group staged by Sir FREDERICK LAWRENCE, Bart., the President, whose collection was one of the finest, and certainly the most interesting to the plantist eye ever staged; and the most beautiful arrangement of flowers. His Orchid-grower, Mr. W. H. WORTS, should be complimented on the admirable effect made. In the background, the fine specimens of *Thunias* were very effective, among them being the purple *T. Penzance*, and the lighter-coloured *T. Bymerianum* and *T. Marshallianum*. Here and there appeared the most beautiful forms of *Epidendrum radicans*, and *E. O'Brienianum*, the purple *E. archaglossum*, and the singular *E. Mooreanum*; and richness of colour was made by the fine specimens of *Cattleya Mossie*, *C. Mendell*, &c. Throughout the group, not less noticeable than the perfection of the flowers, was the remarkably fine condition of the leaf-bearing stems, and this applies especially to the fine specimens of *Cypripedium* of many kinds, both species and hybrids, the foliage of *C. Lawrenceanum* and other marble-leaved species being very beautiful. Some of the most remarkable were *C. Stonei*, with twenty-four flowers, and a lesser plant of a magnificent variety of the same, named *C. Stonei* *C. × magnivirens*, *C. × Eleanor*, and *C. × Leahyanaum*.

The *Masdevallias* were represented by a very fine collection, the varieties of *M. Harryana*, supplying the brilliant scarlet, purple, and marvellous colours. Of them, *M. Harryana futeo-oculata*, a large scarlet with yellow tinge, was the finest. Of the lesser kind, the most beautiful was *M. Harryana*, *M. biocarpica*, *M. × Mumfryana*, *M. × Henrietta*, *M. caudata* *Shuttleworthii*, *M. × Gaireana*, *M. Barlesana*, &c. Other remarkable things were splendid forms of *Zygopetalum × Perrenoides*, some pretty *Epidendrum Endresii*, and its hybrids *E. × Endresii* *Wallisi* and *E. × elegantulum*; *Laelio Cattleya × Phoebe*, a fine *Phalenopsis Ludovicianum*, *Maxillaria Sanderiana*, some very fine *Oncidium concolor*, and other *Oncidiums*, *Cattleya Mossie* *alba*, and a fine display of *Odontoglossum*, *Dendrobium*, &c.

Of special botanical interest were the singular green *Arundina zygopetaloides*, which may be *A. arachnites*, the curious *Eria crispata*, *Oncidium leucosticta*, *Laelio Cattleya*, and the new purple *S. longifolia alba*; *Mirostylis macrochloa*, the charming dwarf *Trichocentrum longicardatum*, a tuft of fleshy leaves and pretty white long-spurred flowers, with blood-red blotches; a *Lycaste jugosa*, with very clear white flowers, and a *Lycaste* involutum, with a host of other curious and pretty plants, including a pot full of *Neottia nidus avis*, the Bird's-nest Orchid.

Baron Sir H. SCHNEIDER, De Dell, Egham (gr. Mr. H. Blandine), in spite of the great draw made on his collection by the Hamburg show, occupied a similar space to that he filled in previous years, and staged a grand group, in which the magnificent forms of *Odontoglossum* for which his collection is noted were a fine feature. Some of the most beautiful were the heavily blotched *O. crispum Sanderianum*, *O. e. Ballotini*, and *O. e. mirabile*, the last-named being very remarkable. Of the fine white forms *O. e. magnificum* was the best; and among other species very fine were *O. sepiarium Vuykianum*, with its beautiful flowers; two plants of *O. × elegans*, some fine *O. vancouverianum*, *O. Hallii*, *O. romosissimum*, and other species. The staging of the group was most effective, in the centre being a number of *Vanda* ferns, and on either hand tastefully arranged masses of *Oncidium*, *Laelio Cattleya*, *Cattleya*, &c. In the foreground, including *C. m. alba*; *C. Skimmer*, and its white variety; showy *Masdevallias*, &c. Some of the most remarkable plants were a splendid specimen of *Cypripedium calossum Sandersi*, with two very large flowers; the wonderful fringed *Laelio Cattleya × Diglyana* *Mossie*, some well-flowered *Laelio Cattleya* *viridiflora*, *Miltonia* *relucta*, *Angulata uniflora* *Torneri*, *Laelio-Cattleya × Hippolyta*, *Epidendrum × elegantulum* varieties, *E. Randii*, *Coleogyne Dayana* with twenty-four spikes, which secured a Cultural Commendation, and *C. Dayana*. The Dell variety, a fine form, which received an Award of Merit, some fine *Cochlidium Neesiana*, &c.

Of special botanical interest were the feathery-lobed *Bulbophyllum barbergianum*, the singular *Odontoglossum magnivirens*, and the little scarlet *Hexisea bidentata*. On the same site, WILSON S. ELIAS, Esq., Hazelbourn, Dorking, arranged a pretty group of those *Odontoglossum* plants which he knows so well how to cultivate. The plants were fine in quality throughout, and *O. crispum Ellii*, with heavy blotches on each segment, a great beauty. Also in the group were good *Miltonia vexillaria*, *Odontoglossum nobilis*, *O. citrosium*, *O. Hallii*, *O. ceratatum*, and other species.

Next came a group of fine old species set up with *Panicum* and *Maidenhair*, by EARL PEAR, Sea House, Brentford (gr. Mr. Wythe), and in which *Laelia purpurata*, *L. tenebrosa*, the large flowered *Cattleya*, *Cymbidium Lowianum*, *Oncidium sphaecolatum*, *Dendrobium Bensoniae*, *Brevia verrucosa*, *Oncidium concolor*, and other standard kinds were effectively shown.

Then followed a pretty group staged by a new exhibitor, W. N. GILBERT, Esq., Fair Oak, Bishopstoke (gr. Mr. Carr), and very creditable it was, and admirably arranged. In it were good *Cattleya Mossie*, *Laelia purpurata*, *Odontoglossum crispum*, *O. Pescatorei*, *O. hastulatum*, *Miltonia vancouveriana*, *M. Phalenopsis*, and other showy, species all well grown.

On the other side of the centre stage, Messrs. F. SANDER & Co. had a very charming group composed of all good things, and very tastefully set up in a bank of green wood Moss. Among the best were noble specimens of the white *Cattleya Mossie* *Reichenbachii*, and the collection of the late G. HANCOCK, Esq., and which is perhaps the best known form of it. The grand specimen bore thirteen flowers and buds, and was an excellent example of a rare, yet showy Orchid; *Laelio-Cattleya × The Queen*, with large dark velvety rubbed lip; *L.-C. × D. S. Brown* (*C. Triana*) *L.-C. × elegans*, with very highly coloured, well expanded lip; *Cattleya × Rossi* (*Leopoldii × intermedia*), a neat and prettily-spotted flower; a pair of the handsome *Aneochilus Sanderiana*, with bright emerald-green foliage, veined with silver, and marbled with olive-green; a fine pair of *Stenoglossa longifolia*, and a plant of *S. longifolia alba*; fine specimens of *Deschampsia* *highlandensis*, well expanded lip; *Cattleya × Laelia tenebrosa* *magnifica*, *Epidendrum Randii*, *Cattleya Schroderae* *alba*, a fine specimen of *Maxillaria Sanderiana*, three distinct and beautiful forms of *Miltonia vexillaria*, the pretty *Phaius biflorus* *Oweniae*, two grand specimens of *Dendrobium infortunatum*; and mingled with this group of new plants were a number of pretty and rare species.

Messrs. B. S. WILLIAMS & SON, Upper Holloway, staged an extensive group, in which there was great variety. Among the *Cattleyas* were fine varieties of *C. Lawrenceana*, *C. Mendell*, and *C. Mossie*, *C. Mossie purpurea* being of unusual colour. Among the *Odontoglossums* were good specimens of *O. citrosium*, *O. luteum*, *O. Pescatorei*, *O. crispum*, &c. The *Cypripediums* were represented by *C. × Alma*, *C. barbatum splendens*, *C. × varicosum*, *C. Mastersianum*, *C. × Io grande*, *C. × grande*, *C. × Harrisonianum* *superbum*, *C. × calanthum*, *C. Chamberlainianum*, *C. × Dominianum*, *C. exol*, *C. Boxallii*, &c. Other good things were *Angulata Clowesii*, *Aristida Fieldgibbi*, *Aria aurantiaca*, *Cochlidia Neesiana*, a very peculiar copper-tinted *Phaius Sanderianus*, *Oncidium concolor*, *O. Marshallianum*, *O. superbissim*, a splendid *Trichopilia crispata*; the background being occupied by some very fine *Vanda tricolor* and *V. suavis*, not usually seen in such good condition.

ELIAS WINDSOR, Esq., Hatfield Hill, Wilsford (gr. Mr. Holbrook), showed his unique *Laelia purpurata* *Ashworthiana*, illustrated in the *Gardener's Chronicle*, July 11, 1896, p. 39, and whose peculiarity is the extraordinary development and colouring of the petals, which initiate the *Laelia* *purpurata* *Ashworthiana* group. He also showed a singular double-lobed *Cattleya intermedia*.

Sir FREDERICK WIGAN, Clare Lawn, East Sheen (gr. Mr. H. Young), staged a very fine and well-arranged group, in which the *Cattleyas* were excellent, especially *C. Mossie* *Rebecca*, which is a very handsome and large flower; a fine *C. m. alba*; a very fine *C. × intermedia* *Clowesii*; *C. Schilleriana*, and some grand forms of *C. Mendell*. The central figure was a very fine *Cymbidium Lowianum*, with numerous spikes; a fine plant of *Cypripedium × Gertrude* *Hollington*, with a plant of the tiny little *Eria extortiva* perched on the bell-glass covering it; the singular *Coleogyne Schilleriana*; some very fine *Odontoglossum* one grand form of *O. Wilkeanum* being specially noteworthy; fine *Laelia purpurata*, *L. tenebrosa*, &c.

MALCOLM S. COOKE, Esq., Kingston Hill (gr. Mr. Duckell), had a group of *Odontoglossums*, *Cattleyas*, *Miltonia* *vexillaria*, *Masdevallias*, &c.

M. FIBET, Argenteuil, France, showed a number of white varieties of *Cattleya Mossie*, and a very large-coloured form named *C. M. grandiflora*.

R. BROOMS-WHITE, Esq., Arddaroch, Garelochhead, showed *Odontoglossum crispum* *Starlight*—the gem of the show—an unique form, with grandly-shaped white flowers, slightly tinted with pink, the petals fringed, and each segment bearing a pair of small red-brown blotches, quite unlike any previously seen.

M. PETERS, St. Gilles, Brussels, showed *Odontoglossum crispum* *Petersi*, a handsomely blotched variety; *O. c. Mrs. Peters*, very distinctly blotched and shaded with rose colour; *Miltonia vexillaria radiata* *Hyacens*, and *M. v. virgata*.

He raised the Duke of Sutherland, Trentham (gr. Mr. P. Blair), showed the noble white *Odontoglossum crispum* *Princess of Wales*, with flowers 4½ inches across.

M. JULES HYE-LEYSSEN, Coupage, Ghent, Belgium, showed some fine *Odontoglossums*, among them *O. Wilkeanum* *albans*, a grand form of *O. × excellens*, *O. luteo-purpureum* *scottii*, the blotched *O. crispum*, *Hecpianum*, *Miltonia* *Beutana* *gigantica*, and the bright scarlet *Masdevallia ignea* *Vuykianum*.

G. W. LAW SCHEFFIELD, Esq., New Hall Hey, Rawtenstall, Manchester (gr. Mr. Shill), showed *Laelio-Cattleya × Tyntesfieldensis*, a splendid hybrid of unrecorded parentage, but evidently some cross of *Cattleya Dowiana*. The sepals and

petals were cream coloured, tinged and veined with rose; the beautifully-formed crimped lip, velvety, ruby-red, darkening to maroon, the base showing a yellow marbling.

A. WARDROUR, Esq., Vase House, Haslingden, showed *Laelia purpurata* *fasciata*, a broad-petalled, darkly-coloured form.

Mr. JAS. CYPRIER, Cheltenham, staged a very pretty group arranged with his usual skill. In the group were a great variety of fine forms of *Laelia purpurata*, some elegant plant of *Epidendrum radicans*, *E. O'Brienianum*, and admirably tall-growing species; *Miltonia vexillaria*, splendidly flowered *Cattleyas*, *Trichopilia crispisuperba*, *Cattleya striata*, *Cymbidium macranthum*, *O. concolor*, and other *Oncidiums*; *Masdevallia Vuykii* *grandiflora*, *M. × Heathii*, some fine *Odontoglossum crispum*, &c.

In Tent 4, Messrs. L. LEWIS & Co, Southgate, had a very effective group, noticeable in which were *Laelia purpurata* *Rosellii* of fine colour; *L. p. Bella*, a pretty light variety; *L. p. Mililiana*, with a very large lip; *Cattleya Mendellii*, a very fine variety; blue-white flower; *C. Mossie perfecta*, also a fine light form; some grand *Oncidium varicosum*; *Cypripedium × Gertrude* *Hollington*, and other fine *Cypripediums*, notably the pretty *C. × Aylmeri*, the singular *Cymbidium canaliculatum*, *Odontoglossum crispum*, and other *Odontoglossums*.

Messrs. J. CHARLESWORTH & Co., Heaton, Bradford, staged a fine group in which *Laelio-Cattleya × Lady Wigan* (*L. purpurata* *Russelliana* × *C. Mossie* *alba*) represented one of the very best plants in the show. Its large flowers had the sepals and petals fully displayed, of a clear bluish white, the gradually formed circular fringed lip, crimped at the edge like the petals, and tinted of a clear pinkish white with some purple markings on the disc, and a rich yellow interior to the tube of the lip. In the group also was the fringed *Laelia Diglyana*, some fine *Cattleya Mendell*, and other *Cattleyas*; *Cypripedium × Leyceianum*, the pure white *C. luteolum* *albans*, the fine white *Cattleya* *Reticulata*, *C. Charlesworthii* variety; *Odontoglossum crispum*, the Prince, with very dark blotches on each segment; *O. e. magnificum*, one of the largest and best whites; *Odontoglossum Pescatorei* *Burkenashianum*, a lovely variety, blotched with purple; the pretty yellow and red *Seprio-Laelia × Marriotiana*, *Starlight* *Kimballiana*, &c.

Messrs. L. VAN DER LINDEN, Internationale, Brussels, showed a group of grand forms of *Cattleya Mossie*, *Odontoglossum*, &c. Remarkably handsome were *Cattleya Mossie* *Queen Empress*; *C. M. alba aurantiaca*, *C. M. Moorebeckensis*; *Odontoglossum Pescatorei imperiale*, a large flower heavily blotched with purple; and some fine *O. crispum*.

Messrs. HUGH LOW & Co., Clapton, had a very extensive and fine group. Among the *Odontoglossums*, *O. crispum* *Queen Victoria* was one of the very finest blotched varieties yet seen, the blotches very dark, and yet bright. In the group were grand *Laelia purpurata*, and large-flowered *Cattleya* *Rebecca*, *C. Mossie* *Rus*, *J. Bradshaw*, *C. × intermedia* *Clowesii*, *C. × Schilleriana*, and other fine *Cypripedium × Gertrude* *Hollington*, and other rare *Cypripediums*; a fine example of *Phalenopsis intermedia* *Bymeriana*, a plant of the fine *Coleogyne asperata* *(Lovii)*, and other interesting species.

W. THOMPSON, Esq., Walton Grange, Stone, Staffs (gr. Mr. W. Stevens), had a group of grand *Odontoglossums*, each with a distinct character, and showing the splendid culture to which they had been subjected. Specially fine were *O. sepiarium aurum*, *O. excolens* *Thompsoni*, *O. crispum* *Annie*, and several very brilliant *Cochlidia Neesiana*.

Major JOSEY, Sunningdale Park, Sunningdale (gr. Mr. Fred. J. Thorne), had a small group of grandly-flowered plants, viz., *Ludoviciania Lehmanni* with three spikes, two splendid *Angulata Clowesii*, large *Miltonia vexillaria*, *Dendrobium arnosum* *giantum*.

M. R. MEASURE, Esq., Rogate, Sussex (gr. Mr. Wooton), showed two plants of the splendid *Cypripedium × Chapmanii* *magnificum*, which recently got an Award of Merit, but now a first-class Certificate. Also *C. × Chapmanii* and *C. × Rhenia* (*harrietana rubrum* + *Goederoe*), also fine.

Messrs. CAFFRS, Tambridge Wells, showed two fine specimens of *Cypripedium calossum Sandersi*.

Mr. H. H. EYRE, Tyntesfield, Ashton-on-Mersey (gr. Mr. T. Stafford), had a small group, in which were *Cattleya Schilleriana*, *Hardy's* variety, the largest and best form which has yet appeared; *Cypripedium calossum Sandersi*, *Laelia purpurata* *Bachhausiana*, *Cypripedium × Goweri* *magnificum*, *C. vexillarium superbum*, and other good things.

Messrs. JAS. VERRILL & SONS, Royal Exotic Nurseries, Chelsea, showed their first hybrid *Phlogothallis*, *S. aureo* × *Viellardi*, a charming novelty, with yellow flowers with purple marks on the petals and lip.

THOS. STAFFER, Esq., Stand Hall Whitefield, Manchester (gr. Mr. W. Stevens), showed the fine *Cypripedium × concolor* *bellitatum*, a very handsome hybrid.

L. DWIG MONK, Esq., Avenue Road, Regent's Park (gr. Mr. Clarke), had a neat group, with *Coleogyne Dayana* in the centre, and around it, good *Cattleyas*, &c.

ROSES.

Groups and out flowers were well up to the usual standard; indeed, so far as the out blooms were concerned, there was a great improvement, the more frequent use of bright Hybrid *Perpetuals* making a much better effect.

Messrs. W. PAUL & SON, Waltham Cross, had some effective group of plants, baskets of out *Roses*, and twelve large boxes of out flowers. The most noticeable of the latter were

Margaret Dickson, *Triomphe de Caen* (a beautiful dark crimson), *La Franco*, *Medea*, *Eugénie Verdier*, *Maréchal Niel*, *Prince C. de Rohan*, and *Danmark*. Among pot plants, *Crimson Rambler*, *Spenser*, *Duke of Teck*, *La Franco de '83*, and *Medea*, were especially good. *Sylph*, a new Rose with deep salmon-pink centre, is promising; but the only remarkable novelty in *Roses* was *Tea Empress Alexandra of Russia*. This is good under glass, as seen here, and Mr. W. PAUL informs us is even better in the open ground. "A rich lake-red, shaded with orange and fiery-crimson," is Mr. PAUL's description. There is a distinct shade of copper and salmon pervading the whole flower, and it is one of the most distinct new *Roses* seen for many years.

A grand group came from Mr. C. TURNER, Slough, who again exhibited *Crimson Rambler* in every form; as arches, standards, pyramids, &c. *June*, *Celine Forestier*, *Comtesse de Sereny*, *Marie Baumann*, *Ulrich Bruner*, *Mrs. John Laing*, *Marchioness of Londonderry*, and *Souvenir d'un Ami*, were among the best plants. *Thalia*, the new *White*

Catherine Mermet were very good and clean. Excellent flowers of *Gustavo Pignanneau*, *Earl of Dufferin*, *Comte Raimbaud*, *The Bride*, *Catherine Mermet*, *Lady Mary Fitzwilliam*, *Ann Olivier*, *Jean Ducher*, and *Ulrich Bruner* were found among the other boxes. A great improvement was made by placing small groups of long-stemmed flowers between the boxes, and backing the whole with some well-grown *Crimson Rambler*. For a small and narrow space, this was one of the most effective groups in the show.

HIPPEASTRUMS.

As representative of this section of decorative plants, not a single specimen in pots was staged, but some cut blooms staged on boards, as in the case of *Hablas*—an unsatisfactory method of exhibiting these flowers—came from Messrs. KELWAY & SON, nurserymen, Langport, but they fell behind in quality what we have been accustomed to see from Chelsea and elsewhere, though two or three varieties were staged for the consideration of the Floral Committee.

of plants of the pale yellow *Duchess Consuelo*, the name of which has recently been changed at the request of Her Grace; and also freely-bloomed plants of the new pink *Malmaison* *Princess of Wales*.

Messrs. W. CUTBUSH & SON, The Nurseries, Highgate, had a large group of *Carnations* close by, comprising in all some 800 plants, including many of the common *Malmaison*, *Princess of Wales*, *Lady Grimston*, *Andrew Noble*, a soft rose self-border variety; *Reginald Godfrey*, *Germania*, which yet stands as the premier yellow self; *La Fillette*, soft pink suffused with reddish-rose; *General Stewart*, dark; and the heavy red-edged *Picotee*, *J. B. Bryant*. Another week was required to have the plants fully in bloom.

Mr. J. FORBES, Buckleuch Nurseries, Hawick, had a group of a red *Carnation* unnamed, with an edging of *Polyanthus* of various colours.

Messrs. BACKHOUSE & SON, York, had a somewhat coarse-looking yellow self *Carnation*, named *Margery Pearce*, which has a defective calyx. Much better in every way was *Primrose*

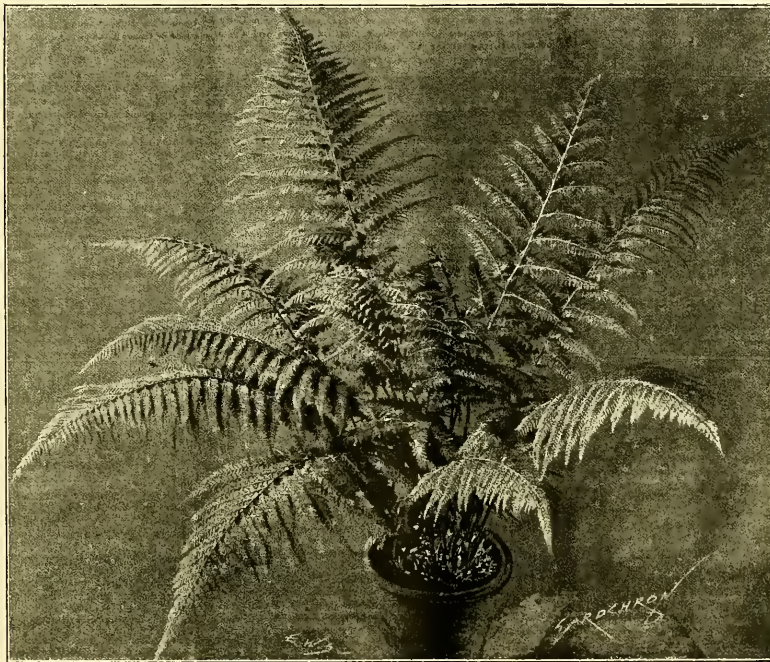


FIG. 131.—DAVALLIA HIETA VAR.

(Exhibited at the Temple Show by Messrs. F. Sander & Co. See p. 352.)

Rambler from Germany was shown in this group. It is promising as a climber, but very small and thin compared to *Rambler*.

Messrs. PAUL & SON, Chesham, filled a corner with a very pretty arranged lot of plants and baskets of cut-flowers, *Madame de Watteville*, *Souvenir d'un Ami*, *Alphonse Souper*, *Captain Haywood* (a very bright H.P., and, if this, is so well built up as to hide this defect); *Maréchal Niel*, *Elise Fugier*, *Madame Charles*, and *William Warden* were all very good. A specimen of the *White Maréchal Niel* did not impress us as being any real improvement upon the *par* flowers often found in the old variety.

Mr. W. RIMSEY, Waltham Cross, had his new H.P. *Mrs. Rumbey* in good form, and clearly proved its adaptability for pot-work in almost any form. This is a clear pink, with some of the greenest foliage found among *Roses*, and is mildew proof. *Climbing Star* of Waltham is bright but thin. Some excellent cut blooms of *Maréchal Niel* were staged in this lot.

By far the best cut blooms came from Mr. G. MOUNT, Canterbury, who had both *Teas* and *H. Perpetuas* up to summer form; his boxes of *Niphotos*, *Mrs. J. Laing*, and

CALCEOLARIAS.

Of these several collections were staged, and as they were at their best—fresh and bright—they were seen to the best advantage.

Messrs. J. JAMES & SON, Woodside, Slough, had several large and small specimens, dwarf, compact, well grown and flowered, the flowers of medium size, well formed, varied, and striking in colour.

Messrs. JAMES CARTER & CO., High Holborn, W.C., had a large batch of plants like the preceding, dwarf, compact, fine in quality, and very even as well as varied in colour. About one hundred plants comprised this fine group.

Messrs. H. CANNEL & SONS, nurserymen, Swanley, had four dozen specimens in excellent character, well grown and bloomed. It was satisfactory to note there was a comparative absence of those loose flabby corollas which are sometimes exhibited.

CARNATIONS.

made an attractive feature, and they are always popular at a Temple Show.

Mr. Whillans, gr. to the Duke of MARLBOROUGH, Blenheim Park, Woodstock, had at one end of the Orchid-tent a group

Queen, from Mr. F. PERKINS, Regent Street, Leamington. This is of excellent habit, very free, pale yellow in colour, and does not split its calyx. Being so much paler in colour, it cannot rank so high as *Germania*, but it will make a useful variety for cutting from.

Mr. GEO. STEVENS, St. John's Nursery, Putney, had a group of *Carnations*, including *Miss Nicholls*, bright red; *Ruby*, a purple self; *Primrose*, yellow self; *Mrs. Geo. Stevens*, a rose self; and *Miss L. Stevens*, a rose-flake.

From Mr. C. BIECK, gr. to MARCUS R. SMITH, Esq., came *Breadman* and *Elio*, two very promising white selfs; distinct, the petals of the last-named slightly umbrated; and *Artemis*, a bright pale red fancy variety, flaked with slate.

CLEMATIS.

As a rule, these were not up to the usual standard. A collection of some fifteen specimens of these came from Messrs. RICHARD SMITH & CO., St. John's Nursery, Worcester. The leading varieties were *Princess of Wales*, light lavender; *Gloire de St. Julien*, delicate lavender; *Blue Gem*, pale bluish-mauve, with large well-formed flowers; *Sensation*, dark violet-mauve; *Impératrice Eugénie*, white, with fine

large, well-formed flowers; and the following double varieties, Mrs. Geo. Jackson, white; Countess of Lovelock, mauve; and Lucie Lockman, white. Fred. Sander, Messrs. G. Jackson & Co., nurserymen, Woking, had plants of two of their new varieties of *C. coccinea*, viz., Duchess of Albany, pink, with a rosy-cerise flame to each segment (Award of Merit); Countess of Onslow, crimson; and Duchess of York, white, with a pink flame. The chief interest in this class of plants is the two new varieties sent by M. JEAN MOSER, of Versailles, though they were much alike. The best was Marcel Moser, a spring-flowering type, the flowers blue, with a broad flame of pale cerise, very distinct and attractive (Award of Merit). NELLY MOSER had flowers of a whiter ground, each segment having a slightly narrower flame.

PETUNIAS

were sprangly shown. Mr. F. SANDER had a bright pinkish-rose double form, large and full, named Fred. Sander, the fringed petals gathered in, dense masses (Award of Merit); and Messrs. JAMES CARTER & Co. had a number of seedling single and double varieties.

CALADIUMS

These showy and useful decorative stove plants were exhibited grandly, and in colour they surpassed very many of the flowers. Messrs. J. LAINO & SONS, FRED. SANDER, and the celebrated collection of the high quality and quantity by M. SANDER, showed two new varieties of the narrow leaf type.

Messrs. PEDD'S exhibit included a rare lot of novelties, of which the six seedling varieties known as Peed's Diamond Jubilee set were well represented. One of these we have reproduced (see fig. 124) under the name of Peed, being the dwarf-growing section, being only about 6 or 8 inches in height. The leaves are about 4 inches wide and 6 inches long; they are bright rose in colour, with carmine veins, and are very prettily suffused with green at the margins. Our illustration shows four plants grouped in a basket.

Mr. W. H. CUMMING had a long, pale pink leaf, having darker coloured veins, and green margins. Duchess of Teck is a very distinct variety of moderate habit, with milky white leaves, having a reddish spot at the summit of the petiole, and occasionally upon the veins. Harry Dixon has pale green leaves, dotted with irregular blotches of a moderate habit, being rather dwarf.

Mrs. JAO, Peed is another Jubilee variety of dwarf habit, having carmine or red leaves, occasionally splashed with green, with darker veins, and a slight narrow margin of green. We noticed also Maria Dubai, a very pretty variety. There was a fine plant of Assungray, a bizarre-looking variety, that was certified to be Peed's *St. Louis* at this show two years ago. Baron Adolphe de Rothschild was represented by a good-sized plant, with numerous, large, roundish leaves of brilliant colour. Rencador was finely shown in the plant illustrated by fig. 124 in Supplement. It is a distinct variety, with large leaves, dark green veining, that tapers towards the tip of the leaf to a black point. Interspaces are rosy-red, and the surface of the leaves is waxy or undulating, and glossy. Habit moderate. Origin, flame of a brilliant red-coloured variety, and green margin, being a strong habit, is an exceptionally fine one for grouping; its effect is very telling. Mrs. Harry Veitch and President de la Devenay were both noticed in fine condition. Rose Laing was exceptionally good in point of colour. Silver Cloud, and several other varieties, sent out by Messrs. J. VEITCH & SONS last season, like all of the plants from the Rompall Park Nurseries, were unusually well-coloured. Silver Cloud as shown in the group, was silvery-white, and melted freely, and occasionally with green tinge. Marquis F. D'Albertra, a green leaf with white centre, marked with rose; Jno. R. Box and Madame Mitjans figured as large plants in the back row. The plants in this group were staged as thinly as space would permit, and each specimen being fringed with Ferns, was effective.

Messrs. Jno. LAINO & SONS, Forest Hill, London, S.E., contributed a magnificent group of Caladiums, directly facing the Orchids, and beautiful though the latter appeared, the Caladiums created a surpassing display of colour, which, for the moment at any rate, engaged the visitor's attention. Never before Caladiums have shown in better ordered specimens from the Forest Hill Nurseries. The plants included in this group were 12 and 14-inch pots of established varieties, such as candidum, which is an excellent variety for lightening the effect of a group, being white in the leaf excepting the very pretty veining; also Triumph de Comte, the largest specimen in the whole group; and, very fine, Flamboyant, Flamingant Rose, very fine; Baron Adolphe de Rothschild, beautiful plant; E. C. Dahlie, a distinct variety with different shades of rose and green marvellously mixed upon the surface of the leaf; and Charlemagne. Lesser plants of equally effective varieties, some of them being rather more rare than the preceding, including Flamingant, Louis de Van Houtte, and Jules Golemand, Comtesse de Brosse, Mrs. Harry Veitch, Botafogo, a distinct and exceedingly pretty variety, bright red in centre of leaf, irregularly running into a bronzy-green margin; Rose Laing, La Duchesse, new and very pretty; Dona Carmen Macedo, Roma, Comte de Lorraine, Effort, Berger, E. W. Moore, capita self-coloured variety of effective shade of red, and others. Then there were near the front of the group such excellent and rare varieties as Alexander III., represented by a plant carrying four leaves, two of which were of considerable size and wonderful colour. It will take a place among the most striking and valuable varieties of the bronzy-green margin and slight markings of same colour heighten its effect; Ladas, Princess Olga, Villa Formosa, La Naia Rouge, Michel Buchner, Golden Queen, Silver Cloud, F. Cooper, Jno. Laing, and others.

Facing the Orchids upon the opposite side, and placed immediately betwixt Mr. TURNER'S dazzling Roses, and Messrs. REYNOLDS' inviting fruit-trees, the group of Caladiums exhibited by Messrs. JAMES VEITCH & SONS, Royal Exotic Nursery, Chelsea, was one of first-rate merit. Most of the plants were afforded sufficient space for individual effectiveness, and a carpet of Maidenhair Ferns served to sufficiently furnish the interspaces. A magnificent plant of Madame Jno. Box in the reverse of the leaf, and a distinct appearance, and supported with excellent specimens of George Berger, Gaspard Croyer, Alice van Geert, silver-coloured with green markings; Mrs. Harry Veitch candidum, Baron Adolphe de Rothschild, the back of the group had an imposing appearance. The dwarf-habited Princess Royal, deep rose and green, the fringe-like habit of Peed's *St. Louis*, the Queen of Wales, Reine de Danemark, and Silver Cloud, one of the set Messrs. VEITCH sent out last year, and a seedling raised by the late Mr. Bauso, were all of good colour, and large in leaf; Mons. Léon Say, a distinct shade of colour; La Lorraine, exquisite; Leonard Bauso, dwarf; and Princess of Teck, a very distinct one. Lady Stafford Northcote, amongst the novelties for next spring, has a handsome self-coloured red leaf, and will make a sterling addition. Avillon, equally new, but of different colour, is also good. Mrs. McLeod, another novelty, apparently of moderate habit, and which we also saw, and was recommended an Award of Merit similarly to Lady Stafford Northcote. Her Majesty, and Exquisite, and a few other of the newer varieties adorned the front of the group, in addition to such dwarf varieties as Chelsea Gem, Duke of York, Baroness Schroder, and Le Nain Rouge.

One of the corners of the group was tented, and was furnished with a capital exhibit of Caladiums from an amateur, PASTIA RALLI, Esq., Ashstead Park, Epsom, Surrey (gr. Mr. G. Hunt). This collection, smaller when compared with the trade displays, included such new kinds as Silver Cloud, Madame Mitjans, Duchess of Fife, Assungray, and Queen of Wales. Baron Adolphe de Rothschild, Madame Jno. Box, Mrs. Harry Veitch, Sir William Broadbent, B. S. Williams, Marquis of Candou, &c. The plants were well grown, and creditable.

CANNAS

Messrs. H. CANNELL & SONS had a group of glorious Cannas staged contiguous to their Gloxinias. This included such varieties as Au-ri, a magnificent yellow flower of large proportions; and Lady Christian (Cory), a self-coloured flower, originally described by the raiser as Chestnut-red, but better described as salmon-red; Progression, Comte de Bouchaud, Duchess of York, all spotted red upon a yellow ground; Queen Charlotte, red, with yellow margins; Souvenir d'Antoine Charlot, bright scarlet, with small yellow margins; Prince Bismarck, scarlet crimson, with a very fine colour; India, very large flower, primrose yellow and red, very fine; Pierzon & Co., P. J. Berkman, Golden Star, and others.

BEGONIAS

Though this show may be said to be rather too early for tuberous Begonias to be exhibited in the perfect condition they acquire in summer, owing to the great efforts put forth by those who make of them a speciality, there is always a large display, and the present show was by no means an exception in this respect.

The Begonias from Messrs. J. LAINO & SONS, Forest Hill, London, S.E., were finely grown plants, with good foliage and large blossoms of good substance. They were arranged in an unobtrusive and pleasing manner, and were, in general, in addition to the Isoplepis that was used as a margin. An excellent rosy pink flowered double variety named Duchess of Marlborough we reproduce in fig. 126. It has a good and erect habit, and the flowers are of very perfect Camellia form.

A long narrow collection of double and single-flowered tuberous Begonias was exhibited on the side-stage in Tent No. 2 by Mr. Jno. R. Box, West Wickham and Croydon. These made an excellent display, and the plants were good in habit, and carried numerous flowers of capital quality. Few of the plants were very bright in colour. Amongst them, Baron Jubilee, a large double flowered variety of yellow, of considerable depth; Queen of Wurttemberg, also double, but of rather different shape, and being much paler in the same colour as the preceding one; Princess of York, lighter shade still; also, double Queen of Queens, rich apricot—very fine indeed. The names of the single ones did not appear, but they were very large, and of well-developed distinct and good colours of commendable substance.

Messrs. H. CANNELL & SONS, Swanley, Kent, had a splendid group of Begonias, the double-flowered varieties strongly predominating. The habit of the strains is decidedly good, the colours of the flowers were very bright, and their size and substance all that could be wished for. Such varieties as Lady Bigge, Mrs. W. B. Miller (crimson), Lady Gertrude, Lord Sherborne, Miss Brooke Firman, Leopold de Rothschild, R. B. Parsons pink, and many others, are of exquisite description.

Mr. H. J. JONES, Ryecroft Nursery, Lewisham, S.E., had a large group of tuberous-rooted Begonias, including double and single-flowered varieties, relieved by interspersed Ferns and Cocos Palms. The group, however, was rather too closely arranged, probably owing to the necessary curtail-

ment of space. Some of the best double-flowered varieties were Orion, scarlet; H. J. Jones, very large, intense scarlet; Walter Finch, white, with a white centre; Beauty of Balmgrove, pink; La France, pink; and other single-flowered kinds of merit included Primrose Queen, yellow; Daisy Wright, very pretty, white edged with scarlet; Firely, deep crimson; Lord Byron, scarlet, with white centre; Blycroft, very large, buff, &c.

Mr. THOMAS S. WARE, of the Hale Farm Nurseries, near Tottenham, made a display of Tuberous Begonias on one of the side stages in No. 3 Tent. Like most of the collections of these plants, the one from Tottenham possessed great merit. We noticed Jubilee Beauty, rosy scarlet, with white centre; Princess of Wales, scarlet, with small white centre; Claribel; Bride of Kent, bright rose, of large size; Samuel Pope, a pretty-edged variety like a Fictete, but much larger; Queen Victoria, soft pink; Jubilee Queen, double white; good Camellia shape; Robert Lawford, scarlet; Rosebud, pretty bloom, of delicate rose, as some of the best.

Fibrous-rooted Begonias were splendidly exhibited by Messrs. STRUTTON & SONS, Reading, in beds in the open, in which the plants were plunged. These represent a great variety of colour, and include Sutton's Reading Snowflake, pure white, and Crimsom Gem. Between these there is almost every gradation of colour. Coral Gem and Duchess of Edinburgh are exceptionally pretty ones. The plants had been raised from seed five months previously. In fig. 130 some of these plants are illustrated.

STREPTOCARPUS

The best display of Streptocarpus was a superb group staged by Messrs. J. LAINO & SONS, Forest Hill, London, S.E. These magnificent plants were arranged in groups according to colour, and represented the different strains that have been obtained by the Chelsea firm. Some of these are pure white, others white with purple darkening on throat, some almost scarlet, others just as near being purple, and there are modifications in every conceivable way in point of markings and colour. Then there were the *S. grati* varieties, which produce numerous smaller flowers upon a spike, being exceedingly floriferous, some bearing fifty buds and blossoms. The colours in this section are exceptionally pleasing. The foliage is rather large, but otherwise the section is "gratia in secula." It is a most valuable material, which has so far failed to produce seed, and must be propagated by division. The pulchellus hybrids grow taller, throwing their beautiful flowers a foot or more above the pot.

PHYLLACACTUS

Messrs. J. VEITCH & SONS, Royal Exotic Nursery, Chelsea, made a bright and excellent display with their hybrid Phyllocacti, a section of Cactaceae plants that, owing to Messrs. Veitch, are now becoming more popular. They are exceedingly showy flowering plants, and though the flowers last but a few days, the tints of colour are exquisite. An Award of Merit was given to the variety, which is very rosy pink, large and pretty flower; also by Syren, with flower of rose, shaded salmon, deep rose at centre. Brilliant is a bright scarlet variety, and Ovis very pale pink, uncommonly large, handsome flower. Thalia is also very fine, and Esquis, salmon-scarlet; Agatha, Coquet white; Delicatus, rosy pink; Festis, pale blue; Electric, deep crimson; Rose Perfection, and others among the best shown.

RHOIODENDRONS

Messrs. JNO. WATERER & SONS, Ltd., Bagshot, Surrey, had a group of hardy Rhodiendrons in flower at the end of the Orchid-table in the large tent. The plants were about 2 feet high, bushy, and especially floriferous. The varieties were named ones, and included some splendid colours and tints. The largest flower was one named Pink Pearl, of delicate flesh colour, and deep rose-coloured stamens. J. H. Agnew, Star of Windsor, Kate Waterer, rose-coloured; B. W. Currier, and Marchioness of Lansdowne were all good.

GLOXINIAS

There were several collections of these plants exhibited, the largest and finest being from Messrs. STRUTTON & SONS, Reading, who filled more than half the central table in No. 3 tent with plants representing their best and selected types. Her Majesty, well known as the most perfect white-flowered Gloxinia yet raised; Duke of York, bright red; Comtesse de Bouchaud, bright red; Empress of India also rich purple; Reading Scarlet, an exceedingly bright, almost dazzling colour were represented in numerous instances; Azure Blue also represents a most lovely-tinted strain, of exquisite character. Sutton's spotted hybrids, which flower rather late than most of the other varieties, were represented by a larger number of plants, each of which were spotted or marked in a pleasing and delicate manner. The collection carried an unusual effect, and the individual plants were excellent in habit, and had been capitally cultivated. We shall give an illustration next week.

Messrs. J. CARTER & Co.'s Gloxinias were staged on a central table in Tent No. 1, and formed part of a very large exhibit of various plants in flower. The Gloxinias represented the firm's strain, which is one of first-class merit and selection.

A small group of Gloxinias was staged by Messrs. J. PEDD & SONS, Rompall Park Nurseries, Norwood Road, London, S.E. These were of the best quality, and of a variety with rather small flowers; also Jno. Peed, a rose coloured variety with white margin; Duke of York, white and helioline colour, very pretty; Mrs. Jno. Peed, with white and deep margin of pinky-lilac; Aighrith Crimson, F. Firfield, and others.

Messrs. J. VEITCH & SONS, LTD., exhibited a small group of Gloxinias, including excellent and well-flowered plants, the habit of them as shown being specially meritorious. The varieties included Orion, white; La Belle, white excepting faint rose markings at the divisions of the tube at apex;

Messrs. H. CANNELL & SONS, Swanley, Kent, exhibited a group of Gloxinias between their fine Begonias and beautiful Camas. In the Gloxinias one of the very best varieties was Prince of Wales, the largest plant of which we reproduce in fig. 132 (see Supplement). It is larger than Beacon, but



FIG. 132.—ENKYANTHUS JAPONICUS; HARDY WHITE-FLOWERED SHRUB.
(Exhibited by Messrs. Veitch & Sons at the Temple Show.)

Cordia, a curiously spotted one; Cicely, with spotted throat and narrow pale margin, the rest of surface being purple; Duchess of Teck, a Geneva-like flower of varying degree of crimson; Jant, spotted with lilac crown; and Sunbeam, a very bright one.

A few plants of Gloxinias were also staged by Mr. J. S. R. Box, West Wickham and Croydon. These plants were interspersed with a few Ferns.

hardly so dark to colour. Petunia, white, with pale lilac or heliotrope margin, is a good variety; and William Marshall, which is pretty generally known. Dorothy Dean, one of the darker purples, with pale margin; and Agat, with white base of throat, white margin, and other parts red, are both good. Lieut.-Colonel Fishwick, Veronica, white; Bairenth, a curiously spotted flower; and Miss Cannell, white, with marking of purple, were also noticed.

FERNS.

As regarded the number of varieties, their interest, and the skill shown in their cultivation, the collection shown by Messrs. W. & J. BIRKENHEAD, Sale, Manchester, was an especially good one. The larger plants consisted, amongst others, of *Adiantum carolinianum*, *A. cultum*, *A. cuneatum elegans*, *A. decorum*, *A. Hedgcockii*, a plant elegant in habit, with slightly divided pinne; *A. cuneatum* var. *O'Brieni*, *A. speciosum*, *A. Williamsi*. The Golden Maidenhair, *A. athiopicum aureum*, a variety of a sparse habit, yellowish, green coloured pinne, and a black rachis, from the Orange Free State. The middle row of the group, and the taller plants contained *Ad. pelatum*, *Davallia filifera*, *Struthiopteris germanica*, *Bolusium culcita*, *Osmunda Claytoniana*, and handsome species of tall, nearly vertical habit of growth; *Athyrium genatum*, a much crisped form, *A. L-f. plumosum elegans*. Of the most graceful examples were *Polystichum angulare plumosum disticholobum* teane, having very fine dense fronds; with overlapping pinne and subdivision; *Athyrium Fritzeliae coronare*, much frizzled; *A. L-L. spiculae*; *A. L-f. grandiceps*; *A. Girdlestonei cristatum*, a striking variety, with tessellated subdivision of the fronds; *A. holothrix*, *Osmunda regalis cristata*, *Gymnogramma Willdenhoffii*, densely powdered; *G. Peruviana argophylla*, *Cheilanthes formosa*, *Alsophila pinnata*, a Fern with a hard frond of a much-divided type, and slender, narrow pinne, which are dentated on one edge only; *Adiantum capillus veneris elegantissimum*; *A. Legerandi* a much-fuscelled form, growing about 9 inches high, probably a variety of *A. cyllinum*; *Gymnogramma cherochyliana*, an annual species; *Ad. regina*, *Pellen Druryi*, a very dwarf close habit Fern from California, blue-green in colour, and wedge-shaped; *P. ornithopus*, dwarf, with finely divided fronds; *P. andromedifolia*, with graceful, pretty fronds, light green in tint, and rachis light brown and smooth; *Gymnogramma Mueleri*, very distinct, with pinnae of a dark green colour, having many short, white hairs on the upper surface; *Lomaria aspera*, a remarkable Fern, with a long-winged and serrated rachis, at the end of which are six to eight similarly serrated strap-like fronds. The habit is pendulous. *Osmunda speciosa corymbifera* is a pretty, slightly crested Fern of light green colour. *Asplenium australicum* is a sort of bird's nest Fern with undivided frond and black midrib.

Mr. H. B. MAY put together a large exhibit of Ferns in examples much larger than his more distant rivals, Messrs. Birkenhead, who are handicapped by heavy railway charges, and do not care to show large plants so far from home. The choicer and smaller examples in Mr. May's group included *Elechnum gracile*, *Doryopteris nobilis*, with a fine dark green digitate frond; *Gymnogramma Mayi*, a densely powdered silver Fern; *G. grandiceps evergata*, a pretty-ruffled Gold Fern; *Wachenheimia longipinnata*, an elegant variety; *G. rupestris glaucescens*; *Paris regina*, white and green fronds; *P. Victoriae*, similar to the last *Asplenium Mayi*, a striking species of a dark green colour, with feathery pinne, set on short fronds; *Davallia Maitesii maxima*, and also the type; numerous *Adiantums*; *Lygodium scandens* and *L. japonicum*, *Deconeseledia spiralis*, a handsome, robust growing species; *Pleopeltis lycopodioides*, *Osmunda cinnamomes*, *Platyterium aethiopicum*, &c. The group was set up without rowding, and the best things were well brought out.

CUT FLOWERS.

Collections of mixed cut flowers were numerous and varied in character, and it was satisfactory to note that less of an inferior character than usual was staged, though a little more weeding out of cut flowers might still be followed without loss.

Messrs. W. PAUL & SON, Waltham Cross, had bunches of foliage of what have been termed pictorial trees and shrubs, and a foreground of boxes of cut *Rhododendrons*, chief among them, Mrs. Miller, Charles Dickens, Lord John Russell, Old Port, Lord Palmerston, Lady Dorothy Nevill, H. H. Munnevell, Michael Waterer, *Atro-sanguineum* and *Braynum*.

Messrs. BARR & SON, King Street, Covent Garden, furnished a great length of foliage. Among their subjects were varieties of *Papaver orientale*, *Lis germanica* in variety and several species; bunches of flowering shrubs and perennials. Tulips and Narcissi being prominent; and also a bank of rockwork suitably planted. This made an effective exhibit, but several weak bunches were in the collection; such a display at such an exhibition should consist only of plants of acknowledged value and novelty. This remark applies equally to other collections.

Messrs. GEO. JACKMAN & SON, Woking, had a collection of hardy cut flowers, which included Oriental Poppies, various *Fycthrums*, a batch of *Primula luteola*, *Flox canadensis*, *Dodecatheons*, &c.

Mr. B. LABRAMS, nurseryman, Shirley, Southampton, had a good collection of similar character, and here, as elsewhere, the big Oriental Poppies were very striking; there were fine bunches of *Heuchera sanguinea*, the deep blue *Anchusa Bartheletii*, the pale pink perpetual-flowering *Fick thianensis*, the true form of *Delphinium Barlowi*, deep purple with a white centre; *Senecio doronicum*, various Iris, &c.

Messrs. PAUL & SON, Old Nurseries, Chesnut, had cut blooms of perennial Poppies, Iris of *Lupinus polyphyllus*, *Heuchera sanguinea*, *Andromeda Silver*, a new one of a silver-rose tint; and some bunches of the newer *Lilies*, single and double, such as *Souvenir de President Carnot*, blush; *Madame Lemoine*, Alba grandiflora, *Alphonse Lavallee*, *Souvenir de L. Späth*; and *Shilonea*, bluish-lilac of pure shape.

Prize List.

Cups. Messrs. Lou Clapton, for a group of Orchids; Caladiums, Cannas, &c.; Messrs. Wm. Paul & Son, Waltham Cross, for Mosses, Rhododendrons, &c.; Messrs. Paul & Son, for Mosses, Cannas, and Alpine Plants; Messrs. Charlesworth & Co., Bishops Cleeve, for Mosses; Barr & Son, Covent Garden, for Herbaceous Plants; Messrs. E. G. R. R. Box, Croxford, for Begonias; Mr. T. S. Ware, Hale Farm, Tottenham, for Begonias, &c.; Messrs. Farmanham Royal, for Calceolarias; Messrs. Cutbush, Highgate, for Carnations; His Grace the Duke of Marlborough, Blandford, for Carnations; Guildenburgh, for Carnations; J. Waterley plants; Messrs. J. Hardy, Bagshot, for Rhododendrons and Maples; Messrs. Peed, Newbold, for Gloxinias and Caladiums; Earl Percy, Brentford, for Orchids and Fruit.

SILVER-OLET BASKINET. Paula Ball, Esq., Ashford, for Caladiums; Messrs. Birkenhead, Manchester, for Ferns; Mr. W. Ierton, Putney, for Ferns; Mr. G. Featherby, Gillingham, for Grapes, &c.; Marquis of Northampton, for Carnations; Mr. J. Prowell, Hammersmith, for table decorations; Mr. L. H. Calcutt, Stoke Newington, for floral decorations; Messrs. B. Williams, Upper Holloway, for Carnations; Mr. W. Gilbert, Bishopsgate, for Orchids; Wellbore Ellis, Esq., Dorking, for Orchids; W. Thompson, Esq., Stone, for Orchids; Messrs. R. Smith & Co., Worcester, for Clematis; Mr. W. C. Christchurch, for herbaceous plants; Messrs. Balchin & Son, Haslecks, Hertford, for New Holland plants; Messrs. Chesel & Sons, Crawley, for herbaceous plants.

GOLD MEDAL. Messrs. James Veitch & Sons, Chelsea, for hardy plants; Messrs. J. G. A. J. d'Almeida, Streptocarpus, vegetables, &c.; Messrs. de Rothschild, Ginnerbury, for fruit trees in pots; Messrs. Rivers, Sawbridge-way, for fruit trees in pots; Messrs. G. S. S. S. & Sibray, Sheffield, for hardy plants; Mr. Geo. Mount, Canterbury, for Carnations; Baron de Selys Longchamps, for Orchids.

SILVER KNIGHTLAN. Messrs. A. Bohn, Argenteuil, for Carnations; Mr. F. Chapman, Colchester, for paragon; Messrs. Laxton, Bedford, for Strawberries; The Horticultural College, Swanley, for vegetables.

SILVER BASKINET. M. S. Cooke, Esq., Kingston, for Orchids; Major J. Joyce, Stanningfield, for Orchids; Messrs. A. A. Peeters, Brussels, for Orchids; Messrs. R. & G. Cutbert, Southgate, for Azaleas.

SILVER FLORA. Messrs. Jackson, Woking, for Clematis and herbaceous flowers; Mr. B. Ladhams, Shirley, Southampton, for hardy flowers; E. Hardy, Esq., Tyntesfield, for Orchids; Messrs. W. Brown, Stamford, for cut flowers; Mr. H. O. Clifford, Stoke Newington, for decorations; Messrs. Edwards, Sherwood, for decorations; Mr. J. Long, Esq., Regent Park, for Orchids; Moss E. Prib, Argenteuil, for Orchids; Mrs. W. Green, John Court, Havering, N.B., for Carnations; Mr. G. Stevens, Patney, for Carnations; Mr. A. W. Young, Stanningfield, for Gloxinias, &c.

Floral Committee.

FIRST-CLASS CERTIFICATE. To Davallia hirta, from Messrs. F. Sauder & Co., St. Albans.

AWARD OF MERIT. To Clematis Duchess of Albany, from Messrs. G. Jackson & Son, Woking; to Clematis Marcel Mesmer, from Mr. Moser, Versailles; to Pteris Paris, to Rhododendron p. pl. Madame Moser, from Mr. Moser, Versailles; to Freziera Sander, from Messrs. F. Sauder & Co.; to Ficus radiata, from Messrs. J. P. Ball, Chelsea; to Ficus bipinnata, from Messrs. R. Wallace & Co., Colchester; to Phyllocladus, from Messrs. J. P. Ball, Chelsea; to P. Stryns, from Messrs. J. Veitch & Sons, Chelsea; to P. Stryns, from Messrs. J. Veitch & Sons, Chelsea; to P. Stryns, from Messrs. J. Veitch & Sons, Chelsea.

BOTANICAL CERTIFICATE. To Arisaema Bakeriana, from Messrs. F. Sauder & Co.

Awards of the Orchid Committee.

FIRST-CLASS CERTIFICATE. Odontoglossum crispum "Starlight," from R. Broome White, Esq., Ardrioch; Cattleya Chrysantha, magnificum, from R. J. Meastros, Esq., Camberwell; Lachia Hecaya Lady Wigram, from Messrs. Charlesworth & Co., Heston, Bradford; Lachia purpurata Ainsworthiana, from E. Ashford, Esq., Walslow; Odontoglossum spectrum aureum, from W. Thompson, Esq., Walton Green, Stone; Lachia Cattleya Tyntesfieldensis, from Law Schofield, Esq., Rawtenstall; Odontoglossum crispum Queen Victoria, from Messrs. High Low & Co., London; Schilleriana, Hardy's var., from F. Hady, Esq., Tyntesfield.

AWARD OF MERIT. Odontoglossum Richard Ashworth, Esq., Ashland, Ashworth, Esq., Ashland, Newchurch; Anacochilus Sandersonii, from Messrs. E. & F. M. Clapton.

Frut and Vegetable Committee.

FIRST-CLASS CERTIFICATE. To Tomato Golden Jubilee, from Mr. O. Thomas, Royal Gardens, Frogmore.

AWARD OF MERIT. To Melon Diamond Jubilee, from an unnamed seedling; to Cucumbers, from Mr. C. Herrin, Frogmore, Maidenhead.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

MAY 20.—The first orchid meeting for adjudicating upon the merits of the orchids exhibited was held on the above date in the large room of the Cotton Exchange. This is an admirable room for the purpose, being 60 feet by 20 feet, and very lofty and well lighted.

There was an admirable display of select and well-cultivated plants, the finest collection coming from A. WARBURTON, Esq. (Mr. T. Lothian, gr.), Vine House, Haslingden, worthy, indeed, of a large Silver Medal, but not put up either individually or collectively for competition. Other growers whose names I could not put up for awards, making together an aggregate a brilliant display, satisfactory beyond expectation to the organizers of the movement. There are now fifty members, and the prospect of increase is good.

The following were the members of the Orchid Committee present:—WM. THOMPSON, Walton Green (Chairman); G. S. BELL (Hon. Treasurer), Wm. A. Green (Hon. Secretary), A. Warburton, H. Greenwood, G. B. Baskhouse, W. Rappart, W. Bolton, P. Weathers, John Cowan, Wm. Stevens, James Anderson.

Mr. THOMPSON showed Cypripedium Rothschilidianum (First-class Certificate), with four good flowers on the peduncle, beautifully coloured, and having the inferior sepal about as large as the dorsal, obliquing in this way Mr. Cookson's well-known variety Cattleya intermedia (First-class Certificate). This was the gem of the exhibits, snow-white in all its parts, and of great substance—a large flower. Odontoglossum spectrum aureum (First-class Certificate), remarkable in its way, the form good, the semi-blossoms on a yellowish ground, marking it as a novelty among the "aquas" flowered tooth-tongued Odontoglossum. Odontoglossum crispum "Annie" (First-class Certificate). This is one of the choicest of the richly-spotted and blotched Cattleyas, the flowers being, as a rule, little larger than the make up; the colouring, however, was superb. Odontoglossum excellens Thompsonianum (First-class Certificate). This is undoubtedly the richest and best form up to the present time in commerce, beating all that have gone before it, in respect to form, rich colouring of yellow and prominent blotching.

G. S. BELL, Esq., Ashford, Wilsford (gr., Mr. A. Hay), submitted, out of his general lot exhibited, the following plants:—Lycaste Skinneri alba (First-class Certificate), having three fully-expanded flowers of wax-like substance, white as possible, with only the tongue of the lip lemon, shading to yellow towards the base; the blade palely white; Cypripedium callosum Sandersi (First-class Certificate) still a front rank plant, which will take some beating; Cattleya Skinneri alba (Award of Merit), a fine, clean, green piece, white in the segments, but the blades of their lips showing a slight bluish tinge.

RICHARD ASHWORTH, Esq., The Ashlands, Newchurch (Mr. Pidsley, gr.), sent a plant nice in flower of Cattleya, under the name of Oaxcelliana alba, which the jury of experts unanimously relegated to Mossie Wagner, and gave it an Award of Merit as such; the flower was large, with a grand ground lip, not so heavily charged with lemon blotch as many forms of Wagneri.

OELO. LAW-SCHOFIELD, Esq., New Hall Hey, Rawtenstall (Mr. E. Schill, gr.), sent Cattleya Skinneri ocellata (Award of Merit). The colour of this is an exceedingly pleasing silvery white with a yellow border as may be seen in the basal blotch pure white, making a telling individual flower. The grandest group of Lachia purpurata in variety, from whitish up through the intermediate shades, the deep

maroon lips—nothing finer than Imperator—was staged by Mr. W. ARBUTHNOT, who had lots of Cattleya Mossie; the well-known brick-brown variegous, the showy yellow ground Ocellidium Marshallianum. This table filled about one-half the length of the hall.

MISSERS. JOHN COWAN & Co. sent also a large assortment, containing some very good Lachia purpurata. Mr. J. BRACKENRUE, of Epsom, Bowden (gr., Mr. Shiner), exhibited two beautifully-grown and flowered plants of Deodrobium Jancaeanum, which well merited a Cultural Certificate; there were more than a score of flowers in each stout nigro-hirsute ball, covered with leaves, too.

Mr. BRACKENRUE, Esq., Highfield House, Haslingden (gr., Mr. Spurr), sent a collection of select Lachias and Cattleyas. FERO, SWINNER, Esq., Hopefield, Didsbury, submitted his spotted form of crispum.

JUROR LEEMANN, Esq., West Bank House, Heaton Mersey (gr., Mr. Edges) showed an extra fine form of Cattleya Schilleriana, much larger and brighter in every way than the type, but the committee not seeing the plant passed it over. An extra fine form of Odontoglossum Andreosacium, running more into the crispum than usual, as well as a couple of fine forms of Oid. crispum. Wm. BOLTON, Esq., Wilderspool, Manchester, sent some cut blooms of fine things, the best of them being a well-formed richly adorned Cattleya Mendeli THOS. RAY, Esq., Cragside, Wetherby, Perth, sent a collection of varied cut blooms. DENCAN GILMORE, Esq., Highbury, Sheffield (Mr. Wm. Day, gr.), showed several good flowers, the best of them being Cattleya Mendeli "Queen of the West" and "Diamonds"; Messrs. J. H. SUMMERRIVE, Dumfries, sent an excellent spike of a good variety of Cattleya Mossie.

BATH AND WEST OF ENGLAND AGRICULTURAL. A horticultural exhibition in connection with the above is yearly held. The site this year was Southampton Common, a place in every way adapted for the purpose. The usual system of issuing a schedule of prizes of the orthodox kind is not the practice with this Society; on the contrary, a sum of money is set apart yearly for horticulture, which Mr. W. H. Fowler distributes according to the merits of the various exhibits. A spacious marquee contains the entire exhibition, and as plants in pots and in the ground are shown, the effect was excellent. A row of Palms ran down the middle, forming a handsome background for the collection of plants, &c.

Mr. B. LADYMAN, nurseryman, Shirley, Southampton, arranged a fine collection of hardy flowers, both growing and out, to face the entrance to the marquee, groups of Iris, Pyrethrum roseum in variety, Poonies, Heuchera sanguinea, and many examples of gorgeously-flowered Cusnias.

Messrs. W. CUTRAN & Son, of Highgate Nurseries, London, contributed a group of admirable Carnations.

Mr. E. WILLS, nurseryman, Winchester Road, Shirley, staged a meritorious group of miscellaneous plants.

Miss TROTT, Esq. (gr., Mr. W. Peed), staged a number of Pinks, hardy Azaleas, stout and greenhouse plants—pleasing arrangement on one end of the hall, and having the same. Messrs. PAUL & Son, The Old Nurseries, Chesnut, showed a beautiful lot of cut flowers of hardy plants, and of Lilacs and Rhododendrons in variety.

Messrs. BARR & Sons, King Street, Covent Garden W.C., sent from their Long Ditton nurseries a collection of cut flowers of hardy plants.

Messrs. J. LAING & Sons, Forest Hill, S.E., staged tuberosus Begonias, Gloxinias, Crotons, and Palms, admirably grown, and possessing much that was of interest to the visitors.

From Mr. N. J. GODFREY, Emswold, came well-flowered Pelargoniums in variety, and affording much desirable brightness to the tent.

Messrs. G. COOLING & Sons, Bath, showed cut blooms of Tea Roses, Briars, and other Roses. Mr. W. H. ROBERTS, Red Lodge Nurseries, Southampton, arranged a large group of Rhododendrons, and a variety of shrubs grown in pots, which came in for much admiration.

Messrs. E. HILLIER & Son, Winchester, showed a choice collection of Azaleas as pot plants, and their hardy shrubs in pots.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.

The Fifty-eighth Anniversary Festival took place at the Hotel Metropole on the 20th inst., the Rt. Hon. Lord Rothschild presiding, supported by Lord Wandsworth, Sir Trevor Lawrence, Bt., Mr. H. J. Veitch, the treasurer, and Sir Arthur, the company numbering some 150 persons. After proposing the usual loyal toasts, the CHAIRMAN said: The Society was almost contemporaneous with the commencement of the reign of Her Majesty, and those among them who were old enough to cast their memories back to the time of the accession of the Queen, could realize that during the last 50 years b-tany, arboriculture, and horticulture had made tremendous strides. The noble Water Lily, the Victoria Regia, and that lovely Orchid named in honour of the Princess of Wales, had come to them during the last 50 years. Our descendants sixty years hence would not doubt be able to gloat over the production of new hybrids and



THE

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AGRICULTURAL ESTATES.

ONE of the most interesting, and at the same time most important books that have been recently published is that entitled *A Great Agricultural Estate*, being the story of the origin and administration of Woburn and Thorney by the Duke of Bedford.* Rarely, indeed, have we perused a book so full of interest. For the most part it deals with agricultural subjects, but horticulture and fruit-culture are also touched upon; and, indeed, much of the book is applicable to each and any branch of plant-culture. The book took origin from a speech delivered by the Duke, in which he endeavoured to show from the history of Thorney, one of the estates above mentioned, that while the circumstances of the labourers had improved, taxation, both local and imperial, had increased, and that rent had disappeared not only from Thorney, but also from the Bedfordshire and Buckinghamshire estates. The possession of these properties, even after excluding all expenditure on the abbey, park, and farm at Woburn, now involves upon their owner a heavy annual loss. "I further attempted to show," writes the author, "how none of the responsibility generally regarded as inseparable from the position of a great landlord had been evaded, even though the burden borne by the one individual person connected with Thorney who obtained nothing from it, was only recompensed by the feeling that he was instrumental in maintaining a system which in the past had added, and in the present is still adding, to the welfare of thousands." The book before us is an expansion of the same topic, and the details relating to Woburn are added to those of Thorney.

Some portions of the book necessarily touch upon matters of controversy between politicians of opposite schools. The Duke, while not ignoring such contentious matters, confines himself mainly to details and matters of fact, to which the most sensitive or prejudiced individual cannot object. We do not care in these pages to touch on any party politics, but we welcome the careful and scientific way in which the facts of the case are collected, grouped, and weighed, feeling certain that evidence so carefully and clearly stated must be of the utmost importance in the settlement of doubtful points. The only remark we feel disposed to make in this connection is, that all great estates have not been, and are not, managed with such sustained generosity, nor on so continuous a plan.

The first chapter of the volume before us contains a very condensed history of the Bedford

family from 1486 to 1895, from which it is seen that the Russells, from the time of the third Earl to the present time, have identified themselves with the improvement of the soil. Landscape-gardening, reclamation of fen-land, arboriculture, high farming, and stock breeding, housing of agricultural labourers, education of the rural population, and experimental farms, "form the history of the race in connection with the lands they owned."

A long quotation from the works of Sir W. Temple (1720) describes the garden at Moor Park, made by the Countess of Bedford as "the perfectest figure of a garden."

The garden was terraced and formal with fountains and statues, shell-rockwork, and other decorations not to the taste of the present generation. The fifth Earl of Bedford became the first duke, and his successor, Wriothsley, was a correspondent of Sloane's, and devoted to floriculture and agriculture. John, the fourth Duke, took special interest in planting, and called in Philip Miller to his aid. His handiwork is everywhere apparent at Woburn. Francis, the fifth duke, founded a local agricultural society when such institutions were unknown; he also started a model farm of 300 acres. The sixth duke loyally maintained the agricultural traditions of Woburn. His successor was even more devoted to agricultural improvements, drainage, farmsteads and cottages, and so on. The record is substantially the same up to the time of the tenth duke. We must pass over, as not directly relevant to horticulture, the wonderful story of the great Bedford level.

The chapter on financial results is one that will be turned to by economists and statisticians. The appendices contain full details of income and expenditure on the two estates from 1816 to 1895 inclusive. On the Thorney property the expenditure for the period named was £1,598,358, and on Woburn for the like period £2,632,186. The loss at the present time amounts to more than £7000 per annum.

The sum expended on new works and permanent improvements at Thorney from 1816—1895 was £265,155, and at Woburn £537,317 for the same time. The average net income from Thorney for the last twenty years is 2½ per cent. on the capital outlay for new works, and from Woburn barely 1 per cent. We content ourselves with quoting these striking figures without discussing the Duke's deduction from them. The estates, in fact, have been managed not on commercial principles but for the benefit of the tenantry, and of the community at large. No money loss has been allowed to interfere with the improvement of the farmsteads and cottages, and remissions of rent have been constant. The total amount disbursed between 1856 and 1895 in the shape of contributions to churches, schools, gifts, pensions, and the like, was £289,923, the net income being £300,024. In nine years of deficit, amounting on the whole to £61,005, the sum expended for charitable purposes was £97,229. The average annual expenditure on charities amounted to £7248; and in the years of deficit the voluntary payments, so far from being curtailed, reached the larger average of £10,803.

Turning over the pages of the volume, we find that on the Thorney estate, there are 210 cottages having gardens, the total extent of which gives an average of 52½ poles to each cottage. As to allotments, the Duke's experience leads him to think that one quarter of an acre of cottage garden will tax to the utmost the energies of a labourer in full work, and that

a man who thoroughly cultivates an acre of land grows more than he can consume, and must face the casualties of that hazardous trade—agriculture. Small holdings (20 to 25 acres) have nevertheless proved an undoubted success.

The eighth chapter will have special interest to our readers, as containing an account of the experimental farm and of the experimental fruit-farm. The latter is to be an experimental station, where horticultural questions and problems are dealt with in the same manner as agricultural questions are at the station of the Royal Agricultural Society, also maintained at the cost of the Duke. We shall defer further notice of the fruit-farm till an early number, when we shall be in a position to comment on the "First Report of the Working and Results of the Woburn Experimental Fruit-Farm," by the Duke of Bedford and Sir Spencer Pickering," a copy of which has just reached us. A sentence will show the spirit in which the stations are worked. "Every investigation, however abstruse or scientific in its nature, must be considered as having a prospective, practical value if it tends to increase our general knowledge of the subject."

After a description of the experimental fruit-culture station, we have accounts of the farm-school, with full details of the system pursued. The lads have to work from 5.30 A.M. till 6 P.M., with intervals for meals; and the training they receive is partly practical, partly scientific—that is, they are taught to work with their heads as well as with their hands.

In the appendices are given, as we have stated, the statistical details of income and expenditure from 1816 to 1895, upon which the comments and inferences of the text are based, and these are followed by an index, which renders the consultation of the work easy.

As we have said, party politicians will look on this book with different eyes according to the sect to which they belong; but those who place the welfare of agriculture and horticulture in the first line, and party politics in the rear, will read this book with eager interest, and feel a sense of gratitude to the Duke of Bedford, not only for maintaining the traditions of his house, but for laying before the public in so clear, unprejudiced a manner the story of a great agricultural estate.

ORCHID NOTES AND GLEANINGS.

DISA HARVEIANA AND D. LUGENS.

Two more very dissimilar and extraordinary species of *Disa* have to be added to the steadily increasing list of varieties which have flowered under cultivation, the two above-mentioned kinds having bloomed with F. W. Moore, Esq., at the Royal Botanic Gardens, Glasnevin, Dublin. So unlike each other are the specimens sent, that it is difficult to recognise them as of the same species, though the apparently irreconcilable difference is chiefly in the labellum, that of *D. lugens* being about an inch in length, and three quarters of an inch in width, and so finely cut and divided as to resemble a piece of very delicate moss; while the same organ in *D. harveiana* is merely a small, plain, linear-lanceolate blade. The spur of *D. lugens* is very short, while that of *D. harveiana* exceeds 2 inches in length. *D. lugens*, which belongs to the grass-leaved section, has elegant spikes of flowers, with the galea pale lilac striped with green, and with the before-mentioned lacinate-mottled lip of a peculiar green hue, these two organs forming the conspicuous part of the flower. *D. harveiana* bears few-flowered spikes, each flower, when expanded, being 1½ inch at the greatest width; the segments more similar and

equal than usually seen in the genus; in colour pinkish-white, with some purple lines on the petals, and spots on the opening of the inconspicuous gales, which finishes in a long spur. It is a near ally of *D. Draconis*, the only other species which resembles it. The flowering of these two species at Glasnevin proves that time only is required to acclimatise these terrestrial, which resent removal very much, and lie apparently inert for years, during which they are frequently thrown away as dead. Few things are more difficult, however, to kill by fair means, and if carefully ten led, they reward with their flowers in time. *J. O. D.*

MANCHESTER AND NORTH OF ENGLAND ORCHID SOCIETY'S AWARDS.

It does not seem to be generally known that the object of this society is to establish a full record of all the sterling good Orchids in cultivation from whomever presented, and they have instructed their committee to recognise all such, either by First class Certificates or Awards of Merit. When this record has been fully established, then their duty will be to limit their honours, after the manner of the Orchid Committee of the Royal Horticultural Society; although it may not be at all times desirable to pass over a very superior form of any species that they may have had a First class Certificate, if the plant candidate in the wisdom of the adjudicators is better than any similar one so honoured that has been entered upon the society's records. *J. A.*

CROZY AND HIS CANNAS.

"I BEGAN," says M. Crozy in *Moller's Deutsche Gartner-Zeitung*, "hybridization between *Canna Warszewiczii* and *C. nepalensis*, a variety with large yellow flowers, and very long creeping tubers. My first Cannas obtained from this cross were named *Bucule* and *Plantieri*, the latter of which showed green foliage and orange flowers. The first one came close to *C. Warszewiczii*, with dark red-brown foliage and pretty large flowers, was very free flowering, and a favourite for some time. After this, by crossing with *C. aureo-picta*, I succeeded in getting hybrids with yellow-spotted flowers, which year by year grew larger and rounder. I then tried to get an early bloomer, and finally succeeded in obtaining a type which was very floriferous. I constantly threw inferior plants away, and kept only the best.

"As to the number of crosses raised by me, I suppose that I have raised, without exaggeration, some 180 to 200 varieties, which, step by step, showed improvement over the older kinds. Among my varieties not yet in commerce, are Cannas with flowers measuring from $\frac{1}{2}$ to 6 inches in diameter. These have all very glowing colours, and bear immense flower trusses.

"My constant zeal for superior varieties shows successes every year in regard to colour as well as size and number of flowers. The flowers now are borne more erect, are of better substance, and show broader, rounder petals, and some are of a size not known before.

"These Cannas for our climate have the advantage of being dwarf and early flowering, and they stand rain and other adverse weather conditions well, which the older varieties do not."

As regards the new type of Cannas seen in the varieties Austria and Italia, M. Crozy states he awaits the competition of these without fear, and comments adversely on the lack of substance and early withering of the flowers.

"We may add," says the *Gartner-Zeitung*, "that M. Crozy is known in Nancy, France, under the name of 'Papa Canna'; and one of his best novelties is named 'Papa Canua.'"

THE ROSARY.

ROSE PROSPECTS.

THE experience of the past few years has shown us how utterly fallacious are all prognostications as to the character of the Rose season. Promising expect-

tations have been suddenly blighted by one cause or another; and, in fact, in our variable climate there is really no certainty. For instance, we are now in the early part of June, and if we might believe the rapturous ecstasies of poets, nothing but balmy airs and bright suors are to be expected—but we prosaic people know otherwise. We have not had a thoroughly good Rose season for some time, and we should be especially thankful this year to be favoured with one. At any rate, I think we may say that there is not much fear of drought; in fact, in many districts where the soil is heavy, Rose-gardens may be described as waterlogged—the heavy, drenching rains of autumn and early winter completely saturated the soil, while the rains which we have had the last two months have kept up the moisture. I do not see, however, that all this has so much interfered with the ripening of the wood as might have been expected. Since their pruning, the plants have started well, and promise at present an abundance of healthy buds; in fact, the whole of this subject of ripening wood seems to me a question of considerable doubt, for the same thing applies to fruit trees. We cannot, of course, as yet see how the fruit will set, but never was there a more abundant show of blossom. [This does not apply in Middlesex, Ed.] Some tell us that all this is fallacious, and that the fruit will not set well; and so they tell us about our Roses, not to be too sure. Well, we shall see, and ask in the meantime whether there is anything to be done.

In this district the Rose-maggot has not yet put in an appearance, but I suppose we may soon expect his not over-gentle attentions; there is but one way of combating this pest, and that is by hand-picking, and this must be done as soon as the maggot makes its appearance. If it were only to roll up the leaf, we might, however disfiguring it may be, put up with it; but, unfortunately, it attaches the leaf to the bud, at which it gnaws away, and so effectually destroys the flower. And so also if aphid appears, care must be taken to syringe the plant effectually; beyond this, I hardly know of anything that is very urgent for the amateur's Rose garden at present. The uncertainty which hangs about the prospect of Roses themselves also affects the Rose exhibitions, and naturally so, and probably more uncertainty is connected with our National Rose Society's exhibitions than usual. The event which will principally occupy the minds of our people this year is a very disturbing element in the calculation of many things; it has already affected the dates of two of our exhibitions. The southern exhibition, to be held at Portsmouth, was originally fixed for June 23, the day after the one for the celebration of Her Majesty's sixty years of sovereignty, and as that day will be a Bank Holiday, it is manifestly impossible to expect Rose-growers to travel on it; therefore it was decided by the local authorities, and fully endorsed by the committee of the National Rose Society, to put the show back, and consequently it will be held on the 18th—in fact, the authorities of Portsmouth during the whole of the Jubilee week will be occupied with something connected with it. This is the earliest date at which the Society has ever held an exhibition, but it is not much earlier than some of the exhibitions of local societies. Rose-growers in the Isle of Wight and other early places have long called out for a show which would be more suited for them; they will have it now, and let us hope they will come out in strong force. Then there are other places along the southern coast, such as Torquay and Exeter, to whom it ought to be acceptable; while I think it most likely Colchester, Chelmsford, Canterbury, and Reigate, all early places, will be able to enter the lists. The date of the metropolitan show has been also altered for the same reason; hitherto the exhibition there has always been held on a Saturday, and as it is well known that the persons are a strong element in the Rose-growing world, many will hail with satisfaction the arrangement that has made changing the day from Saturday to Friday necessary—but not, however, on their account, and I think that unless we have a very unpropitious season, it ought to be the grandest Rose show that has ever been held. There are more

classes than ever, the special prizes are numerous, and the prizes offered for dinner-table decoration with Roses ought to prove a very attractive feature, and as people will have recovered from the intoxication of the Jubilee week, it is to be hoped that all will go pleasantly and well. It must be remembered that we have no longer the experience of Mr. Head at our command, but I am sure one has only to ask Rose exhibitors kindly to consider this, and to help the new superintendent, Mr. Caselton. A little consideration of these circumstances will, I am sure, greatly help him. The exhibition will be held in the central transept, but the space will be much larger than that which has been previously available; there will be more room for moving about, and altogether the position will be, I believe, a suitable one.

The northern provincial show will be for the first time held in East Anglia, under the auspices of the Norfolk and Norwich Association, and as there has been for many years a flourishing society there, which seems to have been excellently managed, we may anticipate a successful meeting. There is one matter, however, which we have to take into account, that the date is considerably later than that on which the Rose show is usually held in Norwich, and many have complained that it is out of the way, and that it is not sufficiently northern; we must recollect, however, that our society is a national one, and must consult the wishes of its members in all parts of the country.

In looking forward to the Rose season there is one point always of interest: what shall we see in the way of new Roses? will those which were "decorated" last year fulfil our anticipations, and shall we receive any additions of value amongst this year's Roses? I have been obligingly furnished by Messrs. Alex. Dickson & Son of Newtownards with a list of the novelties, both home and foreign, which may be looked for this season. I do not anticipate that we shall see much of the foreign Roses, as the plants which arrive over here are mostly cut up for propagating, and are not likely therefore to give very good exhibition blooms; the greater proportion of them seem to be *Tese* and *Hybrid-teas*—many of them have striking descriptions, showing wonderful combinations of colour! The great success of *Crimson Rambler* has led Mr. Lambert, of Trèves, to attempt to raise others of the same character in different colours, and we have consequently three of this class—*Aglaia*, which is described as a yellow rambler, of the same habit as *Crimson Rambler*, with pyramidal masses of bloom, and of a *Tea scent*; *Euphrosyne*, a pink rambler, said to be bright carmine in colour when in bud, and when fully opened the yellow anthers are said to produce a pleasing effect; *Thalia*, a white rambler, of the same character as the preceding, with abundance of flower. If these justify the descriptions that have been given of them, they ought to be valuable additions to our pillar-Roses.

In home-raised varieties we are on safer ground, many of them we have seen, and they are more likely to be brought forward in good condition than those from foreign sources; all rosarians will be anxious to see whether *Muriel Grahame* sustains the character she gained last year. I have seen in a contemporary that Mr. Liddell forwarded some blooms, and that he maintains the same high opinion with regard to its merits that he did last year. As the new pedigree Roses from the same firm, Messrs. Alex. Dickson & Sons, we have Countess of Caledon, which has been several times exhibited, and seems to have met with a good deal of favour; it is a rich carmine-rose in colour, very vigorous in habit, and very free flowering. *Miss Ethel Richardson* is almost pure white with flush-tinted centre, the flowers are large, imbricated, with high centre; it is described as only moderate in growth and very free flowering. *Robert Duncan*, of vigorous growth and free flowering, suitable for garden decoration as well as exhibition purposes, but the colour is described as "rosy lake," and this, very often in other Roses, passes off to a magenta, which is a colour I do not quite like in the Rose. Messrs. Wm. Paul & Son have announced *Empress Alexandra* (of Russia), which is described as a rich lake-red, shaded with orange and fiery-crimson—one of the globular *Teas*, full and large

and vigorous in habit [Exhibited at the Temple Show, where it attracted much attention from the novelty of its colours. ED.]; and Waltham Standard, which they describe as brilliant carmine, shaded with scarlet and violet—the flower is said to be in shape and character of “A. K. Williams,” also vigorous in growth and with fine foliage. Messrs. Paul & Son announce a promising Rose, bearing the name of that well-known rosarian, Alan Charles; it is said to be a large rosy-shaped flower of pure lake colour, and on the reflex of the petals silvery-white, very vigorous and free-flowering.

There will also be the Roses which were much thought of last year, and whose behaviour in the present we shall be anxious to see, such as Messrs. Cooling & Son's Bladud and Lawrence Allen. Paul & Son's Haileybury, Wm. Paul & Son's Enchantress,

and *Ordering them, &c.*, Oxford, 1657, with the engraved title by Goddard, £4 4s.; C. Bowles, *The Florist*, with sixty plates in colours of flowers “regularly disposed in their succession of blowing,” 1777, £9 5s.; J. Boyceau, *Traité du Jardinage qui enseigne les Ouvrages qu'il faut faire pour avoir un Jardin dans Sa perfection, &c.*, Paris, 1688, with sixty-six portraits, and beautiful folding plates of plans of gardens, a very rare work, £9 5s.; P. Alpini, *De Plantis Exoticis*, with beautiful engravings, Venice, 1627, £4; M. Bulliard, *Flora Parisiensis*, Paris, 1776-80, a fine copy on “large paper,” with upwards of 600 coloured engravings of flowers, fruit, &c., in six volumes, £10 15s.; D. H. Cusae, *De Koninglycke Hovenen Aameyende de Middelren om Boomen &c.*, and J. Commelyn, *Nederlantse Heespreiden*, Amsterdam, 1676, with plates, two volumes in one,

della villa di Castellazzo, descriptions in verse, plates of gardens, &c., Milan, 1743, £2; *Fruit Walls Improved by inclining them to the Horizon*, with folding plates, frontispiece by Gribelin, a presentation copy from the author, whose name is not given, 1699, £3 5s.; J. Vander Groen, *Jardinier du Pays Bas*, with plans of gardens, arbores, illustrations of gardening tools, fountains, grafting, &c., Brussels, 1672, £7 15s.; M. Jacques, *Nouveaux Livre de Fleurs*, the complete series of six plates, engraved by Tardieu, Paris, 1760, £3 3s.; W. Lawson, *New Orchard and Garden*, with curious woodcuts, a fine copy, 1660, £2; L. Meager, *The English Gardener*, or a sure guide to young planters and gardeners, with numerous plans of gardens, in the original calf, a rare work unknown to Lowndes, 1670, £9 9s.; *Neues Blumen-buchlein nachten Leben Anworsten*, with beautiful engravings of flowers, 1709, £3 12s.; J. L. Prevost, *Collection des Fleurs et des Fruits peints d'apres Nature*, fine plates in colours, Paris, 1805, £5 15s.; M. de Rosset, *L'Agriculture*, a poem, with fine plates by St. Quentin, Louthembourg, and Marillier, Paris, 1774-82, £3 5s.; *Systema Horticulture*, or the art of gardening, with beautiful plates by Van Hove, of gardens, fountains, &c., a fine copy of this very rare book, 1667, £2 2s.; L. Tessier, *Livre de Principes de Fleurs*, beautiful plates, in two states, Paris, 1770, £2 2s.; *The Flower-garden*, “displayed in above 400 curious representations of most beautiful flowers regularly disposed in the respective mouths of their blossom,” fine engravings, 1734, £13 15s.; G. Thouin, *Plans Raisonnés de Toutes les Espèces de Jardins*, coloured plates, Paris, 1820, £2 6s.; M. A. Villi, *Catalogus Plantarum Horti Pisani*, portrait and plates, Florence, 1723, £2 2s.; and G. Zanoni, *Istoria Botanica nella quale si descrivono alcune Piante de gl'Antichi*, fine engravings of flowers, Bologna, 1675, £2 2s. W. Roberts.



FIG. 133.—ODONTOGLOSSUM CRISPUM “STARLIGHT”; COLOUR WHITE, SLIGHTLY TINGED WITH PINK, AND RED-BROWN BLOTCHES.

(Exhibited by R. Drooman White, Esq. See Report of the Temple Show, in *Gardeners Chronicle*, May 23, 1897.)

Mr. May's Mrs. Pierpoint Morgan, Mr. Frank Caut's Mrs. Frank Cant, and Mr. Romsey's Mrs. Romsey; and there will also be some new varieties of Lord Penzance's Sweet Briars, which are sent out by Messrs. Keynes, Williams & Co.; so that there will be plenty for Rose-growers wherewith to satisfy their curiosity. *Wild Rose.*

RARE BOOKS ON GARDENING.

THERE is a very distinct revival in the interest in the older works relating to gardening, flowers, &c., and booksellers have come to regard them as property of considerable value. A collection of over forty lots, formed by an anonymous vendor, was sold last week at Messrs. Sotheby's, and many of the items realised noteworthy prices. The following list includes the principal lots—R. Austen, *Treatise of Fruit Trees, showing the Manner of Grafting, Setting, Pruning,*

£14 5s.; F. Colmina, *Plantarum aliquot Historia*, with fine plates, Naples, 1592, £2 2s.; Crispin de Pas, *Designs of flowers*, eight beautiful plates, in folio, no date, £12 10s.; De Re, *Hortensis Libellus Vulgaris Herbarum, &c.*, 1539, £2 6s.; John Dunstall, *The Book of Flowers, Fruit, Beasts, Birds and Fishes*, “exactly drawn,” plates, 1661, £9 5s.; *Eden, or a Complete Body of Gardening*, with numerous plates, a fine copy, 1757, £1 14s.; Joha Evelyn, *Kalendarium Hortense*, or the Gard'ner's Almanach, directing what he is to do, and what fruits and flowers are in their prime, a fine copy, with frontispiece, 1699, £1 6s.; J. B. Ferrarii, *De Porum Cultura*, with numerous engravings of flowers, gardens, &c., Rome, 1633, £2 10s.; *Florilegium dat ist cin Blumenbuch darwien alterhand Blumelein ganz Artig mit Lebhafftigen Farben*, with numerous curious coloured plates of flowers, garden scenes, grafting, &c., a fine copy, Frankfurt, 1616, £25 10s.; I. P. Loistico, *Le Delizie*

TREES AND SHRUBS.

THE WHITE SPRUCE (PICEA ALBA).

THIS tree is readily distinguished from the Black Spruce (*P. nigra*) by its smaller size, the lighter colour of its foliage and bark, and its narrow, almost cylindrical cones. Usually it does not succeed so well in this country as the Black Spruce, and in old age is very apt to have a diseased and miserable appearance. In habit the tree is decidedly conical, the branches slightly ascending, and well clothed with greyish-green leaves, each about half an inch long, standing out all around the stem. The cones are nearly 1½ inch long, and are usually produced plentifully. On damp black loam, as well as on greasy yellowish loam, I have known the White Spruce to grow well, a tree on the former soil that I had felled having attained to a height of 44 feet. The timber was white, soft, and easily worked, but did not appear to be of any value—for outdoor work, at least.

P. alba var. *corulca*, which has been referred by some writers to *P. nigra*, and by others classed as a species under the name of *P. rubra*, is of more vigorous growth, and has longer leaves and larger cones than the parent. The plant I have seen, with leaves three-quarters of an inch long, is certainly similar to *P. alba*. *J. D. Webster*. [We should be glad of details concerning the growth in this country of the North Eastern American Spruces, especially *alba* and *rubra*. ED.]

PRUNUS FUMILA (SAND CHERRY).

THE necessity for grouping some kinds of shrubs in order that their full beauty and true character may be shown, is well exemplified by this plant. Grown as a single or isolated specimen it is, perhaps, the least effective of all the Cherries, but how beautiful it may be when brought together in a mass is shown by a large bed of it near the Water Tower at Kew. Here are planted some dozens of this shrub, now about 3 or 4 ft. high, and they have lately been in full flower the branches being thickly set with the small white blossoms. Beneath them the ground was carpeted with

Blue-bells deeper in hue than an Italian sky—the whole was a most lovely picture. *Prunus pumila* is a native of North America, and is a very variable plant. The ordinary form is an erect shrub ranging from 5 to 6 feet in height. It has bright green leaves about 3 inches long, and often glaucous beneath. The flowers are always of some shade of white, but vary in purity, some being quite dull. The plants at Kew have been mostly raised from a form with flowers of a clearer white than usual, which came from Lake Michigan, on whose sandy shores this species grows abundantly.

Var. depressa.—There is a variety of *P. pumila* which has been in cultivation from almost the beginning of the century, and has perfectly prostrate branches. It was called *Prunus depressa* by Pursh, and is described by London in his *Encyclopædia of Trees and Shrubs*, p. 284. In the Kew list it is included under *P. pumila*, but from its very distinct habit it deserves to be distinguished as a variety, and for this the old specific name of *depressa* will serve.

LEDUM GLANDULOSUM, Nuttall.

Two species of *Ledum*—*L. palustre* and *L. latifolium*—have for more than a century been well known and popular plants in our gardens; but this species, although named and described by Nuttall, the American botanist, in 1843, and therefore by no means new to botanists, has, until recently, been almost or quite unknown to horticulture in this country. Three years ago seeds of it were sent from the Arnold Arboretum to Kew, and plants raised from them are now in flower. It proves to be not only quite distinct from the others, but so far as can be judged at present, of at least equal beauty. It is a bush of much the same habit as the commoner *Ledums*, but is perhaps, of more open and taller growth, being described as growing from 2 to 6 feet high. Its leaves are very distinct; they are ovate, 3 inch to 1½ inch long, quite glabrous (except for a few hairs when very young), and thickly speckled beneath with minute appressed glands. Two very well-marked characters of *L. palustre* and *L. latifolium*—the rusty-coloured wool on the lower surface of the leaves, and their revolute margins—are quite absent in this. The flowers are slightly larger than those of its allies, but otherwise they are very similar; they are produced at the ends of the shoots in a cluster of several umbels. The five petals are pure white and elliptic ovate, the long spreading stamens pubescent towards the base. *Ledum glandulosum* is a native of California, British Columbia, and the northern Rocky Mountains. There are specimens in the Kew Herbarium, gathered by Sir J. Hooker and Asa Gray in South California in 1877, with leaves 2½ inches long, and nearly 1 inch wide. *H. J. Bates.*

FORESTRY.

TYPES OF BRITISH WOODLAND.

(Continued from p. 295.)

MIXED PLANTATIONS.—When we come to discuss the principles on which a mixed plantation should be formed, difficulties at once arise. The first point to be settled, of course, is: What is the planter's object in view? Is it profit, ornament, game cover, or a combination of all three? Probably the last of these is the prevailing one, to which may be added the desire to get an effect as quickly as possible. It is evidently little short of impossible, therefore, to lay down any principle which would be applicable in such cases, for no two planters possess similar views on all the above-named subjects. The question as to what constitutes ornament in a mixed wood can never be satisfactorily answered to suit all tastes. One may find his *beau idéal* in the garled and scrubby hole and spreading crown which trees of unrestricted growth freely possess; while another regards tall, clean stems, as the proper type of plantation tree. With regard to species, again, most of us evince a preference for some particular species or genus, and, if possible, we like to get this freely represented in our plantations. All such differences

of opinion have to be studied both in the planting and subsequent treatment of a mixed wood, although we are afraid that the slight probability of a planter seeing his ideas fully carried into effect during his own lifetime leads in most cases to immediates rather than to after-effect being most studied. It seems, however, somewhat of an anomaly that while gardens, pleasure-grounds, and parks, are usually subjected to critical treatment, woods are planted and managed on lines which are neither justified by æsthetic nor æconomic principles. In the first place, what are the æsthetic functions which estate woodlands ought to fulfil? These vary to some extent with the physical features and configuration of the ground, in some cases, the improvement of an extensive landscape, or the variation of a flat and unbroken plain; in others, the provision of special features in the more immediate surroundings of a country residence. But, in any case, we consider the peculiar function which all woods ought to fulfil is that of representing the natural forest growth with which Nature, when left to herself, supplies every part of the country. The position and extent of this growth must be decided by the landscape gardener, after due consideration of æconomic principles and local circumstances, but the intercal arrangement and treatment must be chiefly left to the forester. The latter endeavours, as far as possible to plant those species which are best adapted to the soil and situation. In most cases the chief difficulty consists in deciding not what, but what not to plant, so many are the species which adapt themselves to any particular soil and situation, and so varied the latter in any area of great extent. These are the chief reasons which have rendered mixed plantations so general, and while the idea which is chiefly responsible for their formation may be right in principle, the principle has gradually been lost sight of in a more or less rule-of-thumb practice, which, as already said, is neither ornamental nor economical.

It is not a difficult matter to condemn generally any established custom—first, because every custom has its weak points; and, second, because general remarks are not easily contradicted. If we are to justify our condemnation of mixed woods, therefore, we must descend to details. First, then, what are the chief failings of the ordinary mixture as a picturesque combination of different species? For one thing, it lacks decision of character. The characteristic effect produced by a group of any one species is entirely lost owing to individuals of each of the kinds represented being separated by other individual trees of, perhaps, a totally different habit of growth. During the early stages, the effect of this is not altogether displeasing, as each tree being practically isolated from its neighbours, the attention is more readily concentrated upon individual trees than upon a compound mass of stem and foliage. But when, as sooner or later occurs, the crowns of individual trees become merged into a solid mass, their respective characters are lost, and instead of acquiring, as is the case with an unmixed group, a new but still distinctive character, the plantation becomes a mere jumble of stems and branches in various stages of tree development. Another disagreeable feature is the general uniformity in the growth of the plantation, which prevents the light-and-shade effect upon which the beauty of woodlands greatly depends. The difference in the rate of growth of the various species furnishes such an effect to some extent; but owing to the too regular distribution of species, the general effect is too uniform to produce that which results from bold groups standing out above their neighbours, which at once attract the attention and relieve the eye. *A. C. Forbes.*

(To be continued.)

GREENLANDS, HENLEY-ON-THAMES.

WHAT this estate originally sprang from, can only be conjectured; but the village of Hambleton, which is on the left bank of the river Thames as it runs from Henley towards London, and the estate of Greenland, now the seat of the Hon. W. F. D.

Smith, M.P., are places of somewhat ancient date, as appears from several memorials in the handsome and commodious old church. By the will of Lady Periam, who died in May, 1621, and whose first husband was a Sir Robert Doyley, it would appear that the house was of great size, and richly furnished. There are memorials of the Doyleys in Hambleton Church. A Sir John Doyley resided at Greenland at the commencement of the Great Rebellion, and being attached to the royal cause, the mansion was converted into a garrison. In 1644, it underwent a long siege from the parliamentary forces, first under Lord Essex, and subsequently under Major-Gen. Brown, who planted batteries on the opposite side of the river, and so fired upon the mansion as to reduce it to a heap of ruins. The garrison eventually surrendered, but were permitted to march out with all the honours of war. In making alterations in the gardens and grounds, arms and implements of war have been dug up, and some of the old cannon balls are preserved on the terraces, and what are considered to be the foundations of the old mansion have been laid bare nearer the river. Previous to the purchase of the estate by the late Rt. Hon. W. H. Smith, M.P., some twenty-five years ago, Greenland was in the possession of the Majoribaok's family. Soon after Mr. Smith became the owner, he considerably enlarged the house by adding two wings, and made other additions of value. The white mansion occupies a commanding position near the river, and has in the rear a dense back green of noble trees and shrubs; it is a conspicuous object on coming down or going up the river; and on the opposite side green fields stretch away to a considerable distance. The famous Henley race-course terminates near the mansion; lower down the river is the boat-house, and farther on Hambleton Weir and Lock. The late Mr. Smith made considerable additions to the gardens, glasshouses, and out-buildings; and the present possessor is greatly improving the estate in various ways. In extent it runs down to Henley, and in the opposite direction to between three and four miles beyond Hambleton, and on both sides of the river for a considerable distance.

There are two walled-in kitchen gardens, one near the residence, the other divided from the house grounds by the main road from Henley to Maidenhead, and both gardens slope towards the south, and each have their complement of plant-houses. The residence of Mr. Henry Perkins, who has charge of Greenland, is on the side opposite to the mansion, and it is close to the walled-in garden; by its side is a postal and telegraph office in charge of Mr. Perkins, who fills the post of sub-postmaster of the Greenland district. In this square-walled garden, situated upon its summit, and with a south aspect, is a range of six fruit-houses, three of them orchard-houses, and three vineries; in the former, Figs in pots are largely grown. Brown Turkey, Negro Largo, Osborn's prolific, and others. They are started into growth in November, and freely fed with blood-manure, applied in a liquid form. A good supply of Figs is thus obtained up to autumn, the earliest crop ripens about the end of April. Peaches and Pears are also grown in pots, in all cases blooming freely, and setting their fruits abundantly.

The earliest crop of Strawberries is taken from Stevens' Woaden. It does so well here that it will take the place of *La Grosse Sucrée*, though some say it does not force well in other places. About two thousand plants were grown for early crops, followed by *La Grosse Sucrée* and Royal Sovereign. Osborn's Forcing French Bean is largely grown for early crops. In one of these orchard-houses could be seen a number of *Chrysanthemums*, which had been grown for a supply of late bloom, raised from cuttings rooted in April and May. When the plants have done flowering, and thrown up suckers, they are reduced to one, then the soil is shaken from the roots, spotted, and very fine free-blooming plants are obtained in this way. About 1000 specimens are grown for cut bloom.

Mr. Perkins is a seedling raiser also, and has a number raised from seeds of some of the very best varieties, from which he hopes to obtain some things

of high merit. As a cultivator and exhibitor he is widely known, and at the last December exhibition of the National Chrysanthemum Society at the Royal Aquarium he took several of the leading prizes. In early April his plants were a treat to see—full of promise for the coming shows. A collection of 300 named varieties is certain to contain the very cream of the newer introductions.

Mr. Perkins takes his earliest supply of Grapes from pot Vines, which at the time of our visit promised remarkably well, and are ripe the second week in April. In the case of the three vineries following the orchard-house, one contained West St. Peters and Madresfield Court; the second white Muscats, breaking splendidly from Vines twenty years old; the third Lady Downes' and Alicante.

There are several small plant-houses devoted to the growth of plants for furnishing cut flowers, and for town supply—Roses especially. There are ferneries behind the vineries on the river side, and a

siderable variety. A striking feature at Greenlands during the autumn, through the winter and up to late spring, is the Hippeastrums. Both as a cultivator and raiser, Mr. Perkins has proved very successful. He began cultivating some ten years ago, taking in hand seedlings, and by means of selecting the best varieties for cross-fertilisation, each succeeding season saw some improvement. Flowers of good form are the seed parents, and varieties of clear and distinct colours supply the pollen. Fertilisation is done when the flowers are sufficiently developed; the seed ripens in August and September, and then it is either sown at once, or in the following spring, in pans of light soil; they germinate quickly—in a week or so. When the plants are large enough, they are potted off singly and kept growing on. Some will flower the second year, the majority during the third year. Mr. Perkins adopts the practice of keeping his seedlings growing on till they bloom, not allowing them any resting time; then when they have bloomed they are repotted,

valuable late variety. *Dendrobium nobile Cooksoni* is also very fine, and Mr. Perkins has a very handsome form of *Calanthe Veitchii*. *Dendrobiums* are in good variety; among them a very large and grandly-flowered specimen of *D. thyrsiflorum*. There is also a fine variety of *Cypripedium villosium*. Cool Orchids are also well represented.

The place is so extensive, and there is so much glass, that material could be found for a very lengthy notice. Excellent order and high cultivation are observed on every hand; the grounds are delightful, and in the height of summer must be charming in the extreme. Mr. Perkins has the entire confidence of his employer, and has important duties to fulfil in the estate lying beyond the limits of the garden, *K. D.*

SEED TRADE.

THE SEED CROPS IN THE SOUTH OF FRANCE, 1896. —In a general way it may be said that the season of 1896 was a fairly bright one for the harvesting of seeds. The harvest of Lucerne in Provence was far from having been abundant; want of seed for stock compelled the proprietors to mow their fields of Lucerne instead of letting them stand for the production of seed. The small area which was not sown gave a fair yield, fine in colour, being only somewhat small in size of seeds. Red Clover likewise was a bad crop or total failure from the same cause—drought and lack of green food. Fortunately there remained a large stock of seeds from the year 1895, which permitted the dealers to complete all the orders on hand. *Avena elatior*, *Bromus*, *Dactylis*, specially grown in the Nîmes district proved satisfactory. The crops of Carrot and Mangold Wurzel were entirely bad. Heavy production in other countries, combined with excessively low prices, have discouraged our growers from continuing the cultivation of these seeds, especially Mangold Wurzel. I express the wish that, like our growers, many raisers of the seeds should stop for some years the production in order to diminish the stocks of seed on hand, and, by so doing, improve the price, which doubtless would occur in a few years. Scarcely any roots were planted in the present year. The harvest of vegetable seeds was generally very weak; and taken as a whole, the crop of seeds in 1896 was a very small one in Southern France. The crops are in some years much injured by heavy winds, and the lack of moisture also injures them greatly. *Jacques Rolland, Seed Merchant and Grower.*

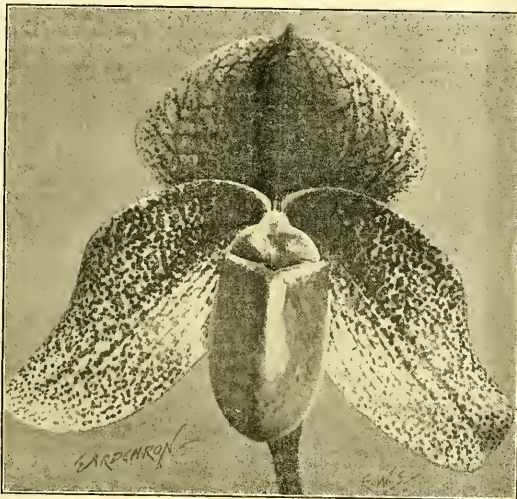


FIG. 134.—CYPRIPEDIUM CHAPMANI MAGNIFICUM = BELLATULUM X CURTISII: COLOUR CREAMY-WHITE, SPOTTED WITH PURPLE.

(Exhibited by R. I. Measures, Esq. See Report of the Royal Horticultural Society's Meeting, in *Gardeners' Chronicle*, May 15, 1897.)

house of fine specimen *Cliveias*, which as they come into bloom are brought into a greater degree of warmth, where they develop superb trusses. *Lapagerias* cover the interior of the roof overhead.

Among the great variety of plants grown for decorative purposes may be mentioned the common Asparagus, a few seeds of which are sown in a small pot, and when the plants are from 6 to 9 inches in height, and beautifully green, they are placed in silver vases, and are very effective indeed on a white table-cloth. To set forth in detail the almost numberless subjects grown would occupy too much space; *Lilium Harrieti*, *Richardia aethiopica*, and kindred subjects were seen in plenty. Violets in frames are very largely grown, and in many varieties. Mr. Perkins speaks very highly of the large and new Princess of Wales, and the reddish-crimson Admiral Avellan, the first is a most robust grower, and produces its massive blossoms in great abundance.

On the river side there is a range of five vineries, also a very large house for stove and greenhouse plants, filled with a great variety of subjects, at the end of March largely gay with spring flowers in con-

forming the soil at the top and bottom of the ball, and then placing them generally into 32-sized pots. Mr. Perkins holds the varieties are at their best about the third year, after which they degenerate. They throw offsets very sparingly, and they generally flower the next year after being taken off. Potting is done after the blooming season is over, they are kept growing in autumn, and never allowed to become dry; while resting, the bulbs are kept near the glass, and watered once or twice a week. They find a place in the pit during the winter, frost being of course kept from them, and as they come on into bloom, they are taken into the large plant-house. Some flower in December, the bulk in January, February, and March.

The forcing of flowers is done to a very considerable extent, such as *Freesias*, *Tulips*, *Lily of the Valley*, very largely; *Rhododendrons*, *Azaleas*, *Deutzias*, *Dielstras*, and many other subjects are employed in great quantities—the requirements being extensive.

There is a very good collection of Orchids; among them *Calanthe vestita Turneri* can be noted as a

THE WEEK'S WORK.

THE HARDY FRUIT GARDEN.

By H. W. WARD, Bayliffe, Essex.

Watering and Mulching, if not already done, must be attended to. Young Gooseberry and Currant trees, and engrafted fruit-tree stocks of the past and present year's working, should be given a good surface-dressing of manure (in any stage of decomposition) or leaf-mould. The surface of the ground should be first broken up, and the whole should then be thoroughly watered. If these details are attended to, results of the best description are invariably realized in British gardens during the semi-tropical weather, as all crops having soil of average fertility, and being uniformly moist about the roots, must necessarily grow apace, and yield produce fine in size and quality.

The Weather and the Crops.—The fruit trees generally showed an abundance of healthy flowers, which gave promise of beautiful crops. But the weather which was experienced in most parts of these islands during the last four or five weeks have reduced the hopes of many a fruit cultivator to a minimum. From 1° to 9° of frost were experienced on several nights in the month of May. The ground beneath Apple, Pear, Plum, and Cherry trees is strewn with the embryo fruits. Trees growing in light shallow soils, necessarily suffering more from drought than those which are planted on heavy land. The Strawberry has also suffered from the effects of these May frosts. As a result of the great loss of fruit, that which remains will necessarily grow to an extra fine size and good quality. The recent rains

will have reached the roots of the trees on every kind of land, even on steep slopes, if it is under cultivation. In the case of orchard trees under grass, it is a good plan, especially in the case of young trees which may not have pushed their roots deeply into the soil, to make a series of holes with a five-tined prong about the trunks of the trees, and extending from 2 to 4 feet therefrom, according to size, so as to admit moisture to the soil. The heavy rains have done much good in freeing the trees from aphides, and to some extent dislodging caterpillars. Where practicable, caterpillars that are left on the trees should be picked off and destroyed; and where this cannot be done by reason of the height of the trees, Paris Green [poison] and water, at the rate of 2 oz. of the former to 25 gallons of the latter, should be applied with a syringe or hand garden-engine, choosing a calm day for applying it, 1 lb. of lime being added to the above mixture, to neutralise the free acid. Paris Green may with advantage be combined with Bordeaux Mixture, by adding 1 oz. of the former to each 15 gallons of the latter.

Strawberry Beds.—The time has arrived when all Strawberry plantations should be strewed down, so as to preserve the fruit in a clean condition. The next best thing to do may be to pick up the best, but little soiled in the stable, which, if put down in rainy weather, is soon washed clean, retaining no odour. The worst material is short grass; long grass is not so objectionable, it rotting less readily.

PLANTS UNDER GLASS.

By G. H. MAYCOCK, Gardener, Luton Hoop Park, Luton.

Warm Greenhouse Rhododendrons.—As these species and varieties pass out of flower, they should be repotted forthwith in fibrous hard peat, and plenty of sharp silver-sand, and some small pieces of charcoal. As in the case of many other hard-wooded plants, the soil should be made very firm around the old ball, and rain-water only used for watering and syringing purposes. It is prudent to repot only such as are gone out of flower, and only sufficient soil should be mixed up at one time as will be required for those plants. The crocking should be carefully done; and in removing the old crocks, care should be taken as not to injure the very delicate hair-like roots. If it be found necessary to reduce the size of the old ball of roots and soil, a sharp-pointed stick, made of Box-wood, should be used, and the roots disentangled without violence; but on no account should this be carried very far, bearing in mind that these Rhododendrons do not possess a very vigorous root-system, and for this reason only a small shift should be given. The supply of water after repotting requires to be very carefully adjusted till such time as the roots have seized upon the new soil, which may occur in from three weeks to a month. After repotting, the plants may be stood on a shelf or bench, according as they are large or small, in the intermediate-house, where they may remain a month, and be removed afterwards to a cool, low-roofed greenhouse for the summer. Syringe them well, affording a slight shade in very bright weather.

Hedychiums.—If the plants of *H. coronarium* and *Gardnerianum* are exceptionally vigorous, and it is thought desirable to increase the size of the pots, the present is a suitable season to repot them. In the case of small pots of rhizomes divided in the spring, and potted into 4½ and 3½, a shift into 3-inch pots would suffice for the season. The new pots should be efficiently drained, Hedychiums liking plenty of water when in growth; and as a potting-soil, make use of rich fibry loam three-quarters, and leaf-mould, sand, and charcoal one-quarter. It is a prudent precaution to keep the plants that are repotted in a close pit or frame for a time, and syringe them overhead morning and afternoon.

Primula sinensis.—Seeds may now be sown in mild heat if early flowers are wanted; use well-drained shallow pans, taking care that the soil is neither too wet nor too dry. The seeds should be scattered evenly and thinly on the surface of the soil after this has been made level and smooth, covered lightly with sand and mould, and pressed down with the bottom of a flower-pot, &c. It is well to cover each pan with a sheet of glass, and to place some moss over that. Remove the glass for a time every morning to dissipate moisture till the seedlings appear, when it may be gradually dispensed with.

Cinerarias.—A sowing may now be made in a similar manner to Primulas, but the soil should consist of one-half sand, and one-half leaf-mould.

Place in a cold frame, and shade the seed-pans from direct sunlight, by placing them at the front of the frame, or behind a south wall or hedge. The young plants should be pricked-off into thumb-pots or broad pans as soon as they are large enough to handle; and on the first appearance of green-fly on the plants, an examination should be made occasionally of the under-side of the leaves to ascertain this—use Richards' Vaporiser or Tobacco-fumigator.

Double-flowered Begonias.—Any which are intended for late flowering will be benefited by being repotted, the flowers being constantly removed till the plants have acquired a greater size. These Begonias should be cultivated in a cool-house, and receive slight shade from ardent sunshine. If through pressure of other work at this season repotting cannot be done, apply weak liquid manure-water once or twice a week.

General Work.—See that strong-growing stove and greenhouse climbers do not suffer through inattention to watering or training. Maintain a genial moist atmosphere in the stove, and do not let the air of the greenhouse get acid, shutting up the former early in the afternoon after syringing the inmates, and close the greenhouse after damping the floors by 6 P.M. A greenhouse which does not contain plants in flower, and only plants that are making growth after having flowered, may be syringed and the floors damped down at 5 P.M., air being admitted at about 8 P.M., more or less in amount according to the state of the weather. Cuttings of *Coleus* and *Acalypha* may be put singly into 3-inch pots for striking; they will make useful stuff for decorating purposes late in the year.

THE KITCHEN GARDEN.

By W. PORE, Gardener, Highclere Castle, Newbury.

Thinning Young Vegetables.—I should like again to draw attention to the importance of thinning the growing vegetable crops in good time as being a chief item in successful kitchen gardening. This applies more particularly to the Carrot, Parsnip, Beetroot, and other deep-rooting plants. In sunny weather like the present, these plants grow very fast, and two or three days' neglect is often sufficient to almost ruin a crop by neglecting a staidly growth, which renders them susceptible to the ravages of the wireworm and various larvae. In thinning large breadths of any kind of plant, much time is saved if a narrow Dutch or draw-hoe be passed through the lines, so as to leave little bunches of plants at 3 or 4 inches apart, these to be afterwards thinned by hand. It is advisable to go over a lot of plants twice the first time, thinning them to 3 or 4 inches apart, and again as soon as the first true leaf is developed, to 6 or more inches, as may be desirable. The Carrot and Onion quarters or beds should be frequently dressed with fresh soot late in the evening or in the early morning, that is, when the foliage is moist, soot being distasteful to the various insects that infest these plants in some seasons and localities.

The Planting of Brussels Sprouts and other Green Crops.—According to the requirements of the family, the gardener will plant out Brussels Sprouts, Savoy, Cauliflowers, and others which may be fit for removal from the nurse or the seed-beds. Brussels Sprouts and Cauliflowers should not, as a rule, be allowed less room than 2 feet from plant to plant, and on strong, rich soils 2½ feet is not too much. These small-growing Savoy, the Early Unn and Tom Thumb, are provided for if planted 1 foot apart, as are also the summer Chalcots of small growth. Should the soil be dry at planting, the shallow trenches deep should be made with the draw-hoe for each row of plants, which should be moistened an hour or so before planting. It will sometimes happen that the plants above-mentioned cannot be set out until the crops of early Potatoes or other vegetables are cleared off, but the plants should not be spoiled in the meantime by remaining crowded together in the seed-bed; rather, thin them out, planting them in nurse beds at 6 inches apart. When land becomes clear, these transplanted things may be lifted, each with a good ball of earth and roots, and be planted with but little check to growth. The draw-hoe should be kept busy amongst growing crops, the remains of crops cleared off the land, and the latter got in readiness for Celery, Runner Beans, &c.

Lettuce.—Seeds of the summer varieties of Lettuce should be sown once in ten days or a fortnight where the plants are to remain, the Lettuce bearing transplantation badly during the heat of summer, unless the plants are prepared in nurse-beds. Plant out good breadths from previous sowings, a good available situation for such plants being the

ridges between the Celery trenches. The Paris Cos under its different names is one of the best Cos varieties for use in the height of summer, hearing-in quickly without the trouble of tying, and being crisp and tender eating. Good cabbage varieties are Veitch's Golden Ball and Sutton's Favourite, both handsome and of good quality. Unless wanted for special purposes, clear away all Lettuce plants as soon as they are past their best, the Lettuce being an exhausting crop.

FRUITS UNDER GLASS.

By F. HARRIS, Gardener, Eastnor Castle, Leicestershire.

Figs.—If treated as recommended in a previous Calendar, the second crop in the early-house will now be swelling fast. Keep all weak growths rubbed off as they appear, and use the syringe frequently until the fruits commence to ripen, but not longer. If the trees are carrying good crops, they should be given liquid-manure, preferably drainings from the farmyard. In the succession-houses the trees will be commencing to swell their fruit; and as signs of ripening appear, keep them dryer both at the roots and atmospherically. Remove any side shoots beyond those required for furnishing the table with a plenty of air both front and back to encourage about sturdy growth, and look to secure good plump points. Trees in the late-house should be secured by ties as required, but do not tie the shoots down too closely. If the points turn to the sun a little, it is very advantageous to them.

Cucumbers.—The earliest plants may now show signs of exhaustion, but if clean and healthy, they are capable of being brought into bearing again. Clear off all old foliage that is not absolutely required, and take out any old wood that can be spared. Remove all old matting ties, male flowers, &c., and give the plants a good syringing with a little soapy water in which a handful of sulphur has been well mixed. Then take away as much of the old soil from the bed as can be removed without disturbing the roots, and top-dress with a mixture of rough loam, lime-rubble, and horse-droppings, in which has been mixed a little good artificial manure. The plants will then be in full bearing again in a very short time. Plants carrying full crops at the present time will require constant attention in stopping and tying of shoots, and in thinning the fruit, &c. Prevent any overcrowding of foliage by removing the oldest leaves. Give good supplies of liquid-manure twice a week with plenty of tepid water, as if Cucumbers become dry at the roots, red-spider will soon appear, and it is very difficult to dislodge. Put out a few plants in frames to keep up the supply when those in the houses begin to weaken, and as the weather will now be getting warmer, the frames will not require so much preparation. Stir up the old stuff, add a few barrowfuls of warm manure, and put in the soil, then close the frames for a day or two, and they will be ready for planting.

THE FLOWER GARDEN.

By CHARLES HERRIS, Gardener, Dropmore, Maidenhead.

Planting the Beds.—Now that milder weather and soft winds with rain prevail, if the flower-beds are empty, bedding-out should be pushed on, first using plants that have been well hardened-off. If the plants are afforded water before being planted out, they will go several days without needing any more water. Should a showery day occur, advantage should be taken of it to plant-out the Ten-week, East Lothian, and other kinds of Stocks, German Asters, Zinnias, and all such annuals as are best transplanted in showery weather. If these must be planted in dry weather, shade of some sort should be placed amongst or around them, and strict attention paid to affording water and sprinkling the leaves in the evening.

Bedding-out Sub-tropical Plants.—Now that the welcome showers have moistened the parched crust, bedding-out may be generally undertaken, leaving, however, whatever is susceptible of injury from exposure to cold till a week or a fortnight later. A sub-tropical garden should occupy a sheltered position in the grounds, and if it be screened from the winds blowing from the N.W. and S.W., so much the better for the plants, although shelter from these quarters is always desirable; the position open to the south and south-east warmth being an essential thing in obtaining size and fine colour in the foliage, for without it few of the subjects employed grow satisfactorily. The Canna is of this kind, and the plants being readily

increased during the spring months, plants for putting out in the beds should now be strong, and sufficiently hardened off. These and the *Hedychiums* are plants which one may use with the *Ricinus* of moderate growth; and if the ground be carpeted with *Decalys clematis variegata*, and *Canna* having dark-coloured leaves are planted thinly, with a central part or plants of *Ricinus Obermanni*, or similar variety, an effective bed will result. Grey-leaved *Sedums*, such as *S. glaucum*, also form a suitable undergrowth, being planted somewhat closely, and the splashing of the foliage by rain is omitted. The free-flowering *Blue Bell Viola* and others may be dotted about among the *Sedum*. Where *Palms* are employed, the pots should be sunk in the soil, taking care to place a spadeful of coal-ashes and some soil beneath each. A well-grown *Kentia* or *Sefar* forms a good central plant in a round bed which is to be filled with other sub-tropicals of minor growth. *Dracaena*, of the individual and fragrant type, are also graceful sub-tropicals. Beds of tuberous *Begonia* should be planted in sheltered but sunny positions, and if in a spot shaded from the sun at noon, the flowers will be brighter and last longer. Other plants of which the gardener may make effective use are *Wigandias caracasana* and *imperialis*; *Solanum laciniatum*, *marginatum*, *robustum*, *Warszewiczii*, *Ricinus Gibsoni*, *R. borbonensis*, and others (the soil for these should be made too rich unless the bed be a large one). New Zealand *Flax*, *Perilla nankinensis*, *Nicotianas glauca*, *wigandiioides*, *Tabacum*, and others; *Grevilleas*, of which *robusta* is a type; *Ferdinanda eminea*, *Daturas chloranthas*, *fastuosa*, and *Wrightii*; *Aralias Sieboldii* and *papyrifera*, *Zea Cerasua*, *Meliantinus major*, *Humea elegans*, and *Acaecias* in variety. Associated with these as margin or carpet-plants, mention may be made of *Amarantus melancholicus ruber* and *A. tricolor*, *Artemesia Judaica*, the *Brizas*, *Centraeus Clementei*, *gymnocarpa*, and *candidissima*; *Chamaepitys Caelestris*, and *C. diantha*; various *Geum*, and *Leontop.* In all but the naturally warmest soils, the bed for sub-tropicals should either be formed over masses of tree leaves, with some short dung mixed with them so as to induce long-continued warmth; or failing this method of warming the soil, a considerable portion of drainage materials should be used under the soil, say to the depth of 1½ foot. If neither of these means be taken, the *Solanums*, *Wigandias*, and *Ferdinandas*, should not be employed.

Annals.—Stocks, *Asters*, *Zinnias*, *Callianders*, *Salpiglossis*, *Phlox Drummondii*, &c., should be planted; and if showery weather be chosen for planting these, they will give but little trouble to establish. Those annuals that were sown in the borders should be thinned as soon as the seedlings are large enough to be handled.

Dahlias of all kinds may be planted, affording the ground a mulch of rotten manure, and a good watering.

THE ORCHID HOUSES.

By W. H. WATTS, Orchid Grower, B. Ford, Dorking.

Affording Water.—Plants of *Angrecums*, *Airides*, *Saccolabiums*, *Renanthus*, *Trichoglottis*, *Esmeiraldia*, *Acampe*, *Cleisostomus*, *Mystacidium*, and growing *Vandas*, and others that are potted in crocks and sphagnum moss only, do not require much water at any season, and most of them are now pushing up leaves and making roots freely, and living upon aerial humidity chiefly; a moist state of the houses must be maintained till their growth is finished, just sufficient water being afforded them as will keep the sphagnum-moss fresh. The same remarks apply to the *Phalaenopsis*.

As the young growths of *Dendrobium* will now be progressing fast, the amount of moisture at the roots must be much increased; but as regards the evergreen section of *Dendrobis*, the plants should be kept rather on the dry side till growth has recommenced.

The deciduous *Calanthes* must still be carefully afforded water—the present being a critical period with them, and if overwatered at this time the roots become discoloured, the growths spotted, and the tips of the leaves turn black.

Catasetums, *Cynoches*, *Mormodes*, and *Eulophia gicatensis* all require similar care in watering as the *Calanthes* until re-established. The pretty *Arundina bambuseifolia* and *A. Philippii* are sending up strong growths, and should be placed where there is plenty of light, and be kept moist always. Amongst other *Orchids* that are grown in this house, as *Erias*, *Dalbyphyllum*, *Cirrhopetalum*, *Sarcopodiums*, *Megalacium*, *Trias discolorum*, *Brassavolas*, *Suticariacs*,

Microstylis, *Bulles*, *Pescatoreas*, &c., they should all be copiously watered for several months to come. Plants that are growing on blocks if stunted for water during the growing season generally become smaller each year until they disappear. Instead of relying upon the syringe for watering such plants, it is better to immerse the blocks in water for several minutes.

Cattleyas and *Laelias* do not require water very copiously at any season, but just enough to keep the pseudo-bulbs plump, and if the plants are properly potted in the best fibrous peat and sphagnum-moss, they require as a rule to be watered only at long intervals of time, and when these materials have become thoroughly dry. It is not possible in the space of these articles to touch upon every species and variety grown in the two divisions referred to, and the amateur must try to make himself acquainted with the proper growing season of the plants he grows, so as to be enabled to afford water at the proper time.

Vandas.—Those of the *suavis* and *tricolor* sections may now be placed in a part of the *Cattleya* or *intermediate-house*, care being taken to shade the plants from the sun's rays, or they will lose their bottom leaves that is desirable. Excessive flowering and much water at the root must be strictly guarded against; and rather than afford the plants a thorough application of water each time they appear to be dry, merely keep the moss in a growing condition by an occasional sprinkling from a fine rose-can. *V. Amesiana* and *V. Kimballiana* should be treated similarly in regard to watering, except that these species should have rather more light. Both will now be making roots, and any necessary re-surfacing may be carried out forthwith. The leaves of *Vanda Amesiana* are liable to be infested by small species of scale insect, which, if not destroyed, causes much harm, and in freeing the plants of them, the operator must not bend the tips of the leaves which are extremely brittle.

Coleogyne cristata.—Re-potted plants of *Coleogyne cristata* and its varieties may be lightly syringed overhead several times daily till growth becomes fully active, at which time the soil should be made slightly moist, the supply of water being increased by degrees as growth progresses. For the present, the plants should be shaded from strong sunshine.

Species of Chysis which have gone out of flower will have made some amount of growth, and as many of the species commence to make roots at this time, it is a good opportunity to do any fresh potting required. For the present, these species of *Chysis* may be hung up in a light part of the *Cattleya-house*, and as soon as the new growths begin to form their pseudo-bulbs, they should be removed to the East Indian, or other house where there is plenty of light and more heat and moisture. From now onwards, and till growth is checked, these plants require copious waterings when the potting materials have become dry.

Barbierias are easy plants to grow, and *B. Lindleyana*, *B. Skinneri*, *B. cyclotella*, and *B. elegans*, under good culture brighten up our *Orchid-houses* during the winter. Most of these species are beginning to grow anew, and should be overhauled. First remove the decayed sphagnum-moss, then cut away all dead roots and unhealthy parts of roots, afterwards laying the plants to new wooden rafts, upon which a layer of sphagnum-moss is first placed; the plants will grow satisfactorily when fastened to twigs of Birch, several of these being stuck into properly-drained pans or baskets, with a surface of fresh sphagnum-moss. *Barbierias* should be hung in a light part in the *Cattleya* or *Mexican-house*, and afforded abundance of water during the season of growth, syringing them overhead on sunny afternoons at closing time. See that scale, mealy bug, and green-fly do not infest them, or the growths will be stunted in development. Amongst the more interesting plants now in bloom is *Cypripedium caudatum*, a species sometimes observed in poor condition, which is in most cases due to excess of heat and direct sunlight, and deficiency of fresh air. The best place for a plant of this species is on the north or the shady side of an intermediate-house, where it will get abundant ventilation. About two weeks after removing the flower-spikes is the best time to re-pot the plant. A strong and healthy specimen may require a pot two sizes larger than the one it has grown in, which must be filled to one-third its depth with clean crocks, topped with a thin layer of sphagnum-moss. Peat and sphagnum in equal parts, with a few crocks or lumps of tufa intermingled, form a suitable compost, which should be pressed with moderate firmness around the base of the plant. *C. caudatum* should never be allowed to get dry at the roots.

THE APIARY.

By EXPERT.

Swarming.—It will not surprise us to hear of early "swarms" this year, should the weather continue warm. There are plenty of stocks showing promise in that direction, and if the giving of space be delayed too long, they will be difficult to control. We strongly advise novices not to "pine" for the time when they may begin making artificial swarms. Experienced bee-keepers may find it advantageous and necessary at times to swarm bees artificially, but the amateur will find less to discourage him if he allows his bees to swarm naturally. If he wants increase, stimulate carefully, and give no surplus room, they are then likely to swarm early, and swarm often, while natural swarms are safer and better in every way than artificially made ones. It must be admitted that circumstances may arise to make it undesirable to allow or wait for natural swarming, and so we may say that, under certain conditions, artificial swarming is simple enough. Given warm weather, and two strong stocks of bees, it only requires that the queen be lifted out of the hive No. 1 with a frame of comb on which she happens to be found, and placed in the centre of a new hive, the frames of which should be fitted with foundation, or preferably frames of combs and foundation alternately. The new hive is then set on the stand previously occupied by No. 1, and No. 2 is moved some distance away to a new stand, while No. 1 takes its place on No. 2 stand. Thus the new hive gets the queen, and all the flying bees of No. 1 (this, of course, constitutes the swarm), while the adult bees of No. 2 take possession of the combs and broods of the former, raising for themselves a new queen from the brood left in the hive. If this operation is performed in the middle of a fine day, it will very rarely fail. This is the simplest and safest method of forming an artificial swarm. Should swarms have come off before the issue of our next number, they must, as already mentioned, be fed daily during bad weather. A few wet or cold days immediately after having greatly check the progress of new swarms, and it is of the utmost importance to keep them going by feeding, so long as the adverse weather lasts. Nothing should be left undone which will be of use later. Hives, supers, syrup for feeding, &c., must be prepared ready for use. Parcels of things which have been stowed away during the winter should be examined and put in order, so that they may be at hand when wanted; in fact, now is the time to look over everything which is likely to be required both for swarming and supering, in order that make-shift appliances need not be used—and, above all, the necessity avoided for doing work in a hurry, which, as we have so often said, means doing it badly.

New Use for Surplus Pollen.—Perhaps the following use for surplus pollen may be of interest:—Having cleared a shallow frame super of some pollen-plugged cells, the refuse mass (about two handfuls) was put in a gallon of water, and heated to just below boiling-point. Then, while still hot, sugar was dissolved in the liquid until an egg would swim with part of its surface exposed equal to the size of a shilling (as in the old recipe for *mazur*). When lukewarm, 1 oz. of yeast was added, and placed in a warm room. Very vigorous fermentation set in, and after a few days the liquid was sieved and bottled. This forms an agreeable, sharp, strong drink.

From Bee Record. *Query No. 974.*—Salt-scale about the hives for keeping down weeds. Please inform me in May *Beehive* if salt-scale would do for speeding round hives to keep weeds down? I mean, do you consider it would be injurious to bees? If not, I think it would be a good thing for the purpose, and it would look nice and clean, like spar. I am a reader of *Record*, but I have never seen salt-scale mentioned in your paper. *T. B. C., Cheshire, April 14.*—Reply: Our knowledge of salt-scale is too limited for us to say how it would answer so far as keeping weeds down about hives. There need, however, be no fear as to its saline properties doing any harm to bees. We should rather think it would do good, seeing that bees sometimes visit objectionable places when tempted thither by saline liquids.

"THE NEW GULLIVER."—The Roxburgh Press, Ltd., will shortly issue a book, entitled *The New Gulliver; or, Travels in Athonia*, by C. T. DRYDEN, being a scientific skit on *Gulliver's Travels*, or a Naturalist's Experience as a Lilliput. Natural History rendered easy and amusing.

EDITORIAL NOTICES.

ADVERTISEMENTS should be sent to the PUBLISHER.

Local News.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

Newspapers.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

Letters for Publication.—As well as specimens and plants for naming, should be addressed to the EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith. The Editor does not undertake to pay for any contributions, or to return unused communications or illustrations, unless by special arrangement.

Illustrations.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, &c.; but he cannot be responsible for loss or injury.

APPOINTMENTS FOR JUNE.

FRIDAY,	JUNE 5	Whitechapel Show of the Royal Botanical and Horticultural Society of Manchester, continuing until June 10.
MONDAY,	JUNE 7	Cambridge Horticultural and Rose Show.
WEDNESDAY,	JUNE 9	Chelmsford and Essex Horticultural and Rose Show (2 days). Royal Cornwall Agricultural Show, at Lostwithiel (2 days).
FRIDAY,	JUNE 11	Royal Botanic Society, Lecture.
SATURDAY,	JUNE 12	Royal Botanic Society, Meeting.
TUESDAY,	JUNE 15	Royal Horticultural Society, at Drill Hall. Lyde Horticultural and Rose Show.
WEDNESDAY,	JUNE 16	York Floral Fête (3 days).
THURSDAY,	JUNE 17	Linnæus Society.
FRIDAY,	JUNE 18	National Rose Society's Southern Show, at Portsmouth.
TUESDAY,	JUNE 22	Queen's Commemoration Day. Victorian Era Flower Show, at the Crystal Palace.
WEDNESDAY,	JUNE 23	Richmond Horticultural Society's Royal Agricultural Society's Show, at Manchester (6 days).
THURSDAY,	JUNE 24	Colechester Horticultural and Rose Show.
FRIDAY,	JUNE 25	Maidstone Horticultural and Rose Show. Royal Botanic Society, Lecture.
SATURDAY,	JUNE 26	Royal Botanic Society, Meeting. Royal Horticultural Society, at Drill Hall.
TUESDAY,	JUNE 29	Royal Oxfordshire Horticultural Society, Commemoration Show, Hereford and West of England Rose Society, Exhibition in the Shire Hall, Hereford. Rose and Horticultural Shows at Canterbury and Sutton.
WEDNESDAY,	JUNE 30	Croydon Horticultural Society's Show. Reading Horticultural Society's Rose Show. Ealing Horticultural Society's Show.

SALE.

FRIDAY, JUNE 11 Imported and Established Orchids, at Froehner & Morris' Rooms.

AVERAGE TEMPERATURE for the ensuing week, deduced from Observations of Forty-three years, at Chiswick.—60°.

ACTUAL TEMPERATURES:—

LONDON.—June 2: MAX., 66°; MIN., 51°.

PROVINCES.—June 2 (6 P.M.): MAX., 69°, YORK; MIN., 48°, Aberdeen.

Hedgerow Timber.
To all those who know the small economic value of hedgerow timber, even when felled in sound condition, the various reasons for planting it seem rather beside the mark. If we take the trees found in ordinary hedges in parts at a distance from the metropolis, those consist of a heterogeneous lot of species, but mostly Oak, Maple, Sycamore, Beech and Ash; and the trees standing without shelter have usually,

as a consequence, a compact, dense crown, commencing at from 4 to 8 feet above the hedge top, and supposing the hedge itself is 5 feet high, they have a bole of from 9 to 13 feet in height—that is of just about the height of a gate-post, or the length of cart-shafts, which is about all the uses that the boles can be put to when cut. Conceding this much, it may be asked what useful purpose is served by planting trees in hedgerows. We are sure that there are many direct evils that follow the practice, namely, the spoiling of the hedges by depriving the latter of light and the land of moisture, as far almost as the tops extend, and shading and impoverishing the land as far as the roots and crown extend, thus inflicting a direct injury to the crops in the neighbourhood of the hedge, which cannot be of advantage to either tenant or owner.

We have as a set-off against these evils, as previously stated, a lot of trees of little commercial value, and a well-wooded appearance given to the land, but which is in appearance only.

If hedgerow-timber must be planted, and at a minimum of loss to the farmer and market-gardener, the trees must be shorn of their branches, and reduced to the dreadful mop-headed specimens so common within a few miles of London—mere caricatures of trees. We believe that the pleasant, well-wooded appearance of the country can be preserved in most part by doing away with a great many of the old hedgerows, which may be of use in some cases, as affording shelter to stock in the fields, and as wind-breaks, and substituting banks of soil, and a ditch, perhaps, on one or both sides, the bank being topped by a stout wooden or iron rail, or with dwarf hurdles of iron; and in districts not hunted over, with strained iron-wire. With the disappearance of the hedges, the cultivator would get rid of a source of great expenses regards the labour required to keep them in order; and he would also be freed from those most prolific nurseries of weeds and of harbour for rabbits and birds which prey on his crops, the weedy ditches, and banks, and hedge-bottoms. Those who have experience of estate or farm-work will testify to the readiness with which a bank and ditch may be cleaned of weeds and put into good order, as compared with an old hedge having a ditch at the foot. The latter is soon cleared of its vegetation with a bagging-hook (form of sickle), but no amount of labour which the farmer cares to employ will free the hedgerow of weeds. There are some who will tell us that many of the birds found in hedgerows are the farmer's friends; be it so, but failing the hedges these birds would still find suitable nesting-places. His best friends of the hedgerows are the small carnivora—the stoats and weasels; and these would always find congenial quarters in the banks, which might in time supersede the old hedges. These banks could have their somewhat severe lines softened by planting at wide intervals small-headed trees, as those of the Crab, Thorns in great variety, Cider fruit, common Holly, Portugal Laurel, Morello Cherries, Damsons, Laburnum, Snowball-trees, Sorbus domestica (Service), Mountain Ash, Sea Buckthorn, and many other kinds of trees of small growth and moderate prices. In some localities the Weeping and common Willows, and in others Thuya, Junipers, Cypress, and other Conifers of small growth, might be planted.

The timber that is in constant demand for a variety of purposes on a farm could be grown in a much better manner, and of finer quality, on a few acres set apart in some suitable corner of the occupation; and if this were generally done by landlords and owners, the present wooded aspect of the country-side would be imparted to it equally well, or better than is now the case, besides extra coverts being provided for game-birds, &c.

DURING QUEEN'S COMMEMORATION DAY, on the 22nd inst., the Royal Gardens at Kew will be closed by order of the First Commissioner of Works. If a similar rule be observed in other public and private gardens, a small proportion only of our readers will be unable to take part in the general rejoicing.

THE RECENT TEMPLE SHOW.—In our report of this show in our last issue we inadvertently omitted to notice the exhibit of Messrs. JONES & SONS, Shrewsbury. They had an extensive and choice selection of floral designs of much the same character as we frequently see from the same firm at the Shrewsbury Fête in August.

TESTIMONIAL TO ALDERMAN W. H. ROGERS, J.P.—The members of the Southampton Horticultural Society, for some years one of the leading societies in the South of England, having learned that the estimable and venerable chairman of the executive committee, Mr. W. H. ROGERS, the proprietor of the far-famed Red Lodge Nurseries at Southampton, felt it needful to retire from the honourable post held for nine years by him with so much credit and benefit to the Society, resolved to invite him to accept a suitable address as a parting testimonial or compliment. The ceremony of presentation took place in the Mayor's parlour on the 17th ult., the presentation being made by Mr. ALDERMAN BONE, a vice-president, on behalf of the members. Mr. BONE mentioned that Alderman ROGERS had been identified as a member of the Horticultural Society for thirty-five years, and during that time he had greatly assisted the shows by the large exhibits of flowers, fruits, &c., which he had made. The Society was just now in some difficulty, because of the lack of a real home for the summer shows, and the retirement of the chairman rather accentuated that difficulty, which, however, he hoped the Society would in due course surmount. The testimonial comprised a very handsomely-framed and illuminated address, which was of the most complimentary kind. To this Mr. W. H. ROGERS made a very feeling and suitable response.

ROYAL SEEDSMEN.—We understand that Messrs. DICKSON & ROBINSON, 12, Old Millgate, Manchester, have, by Royal Warrant, been appointed seed merchants to the QUEEN.

SEEDS BY THE TON.—The India Office has lately issued a very interesting report on the purchase of Carrot-seed, for the purposes of famine relief in northern India, basing its intentions upon Sir EDWARD BUCK'S admirable report of October 6, 1878, "On the Use of Carrot and other Root Crops by the Agricultural Population of the North-West Provinces during Times of Scarcity." From this previous experience it will be gathered that this popular vegetable has been found of service as a food plant at times when the native crops have proved a failure. The quantity required to fill this enormous order—200 tons—seems astounding, and would set many a thinking as to how it could be carried out; but our leading seedsmen are so accustomed to great weights, that we are told in this report that 2,302 sacks, scaling nearly 108 tons, were packed, despatched, and shipped within nine days after receipt of the order, and Messrs. CARTER tell us that if there had been another steamer available within the limit of the date given, they could have despatched the whole quantity. Surely they well deserve the letter

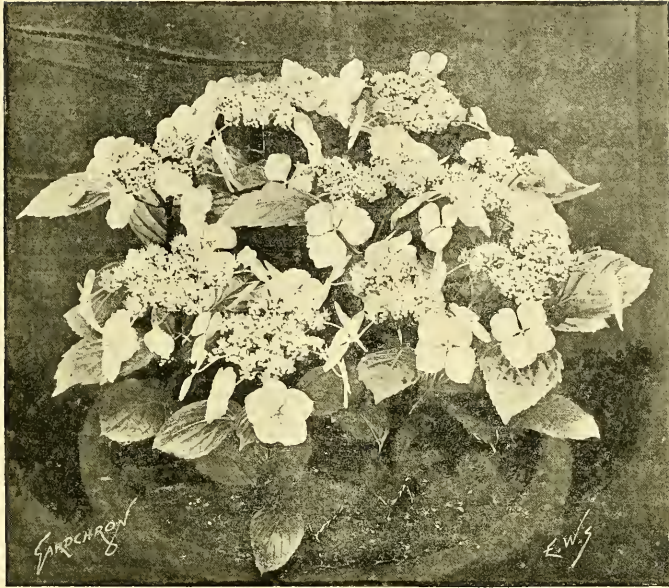


FIG. 135.—VARIETY OF HYDRANGEA HORTENSIS: FLOWERS BRIGHT ROSE COLOUR,
AND MORE THAN TWO INCHES ACROSS.

(Shown by Messrs. James Veitch & Sons, Ltd. See Report of Temple Show, in *Gardeners' Chronicle*, May 29, 1897.)



FIG. 136.—MESSRS. SUTTON AND SONS' GLOXINIAS.

(As exhibited at the Temple Show, May 26-28, 1897. See Report of the Show, in *Gardeners' Chronicle*, May 29, 1897.)



of thanks that was sent them by Her Majesty's Secretary of State for India, as the report states, "For the energy, celerity, and comparative economy with which this large exportation was effected."

PLANT-GROWTH AND THE WEATHER.—In a very interesting paper on the effects of the weather upon vegetation read at Bradford, by Mr. JOHN CLAYTON, on March 1 of the present year, the author made some interesting observations relating to the increased girth of trees in proportion to the favourable character of the weather. Careful observations of the weather were duly chronicled, but what seemed suitable weather was not always followed by corresponding results in the expansion of trees. However suitable the weather or season might be, if the trees were flowering or fruiting freely, there would be only slight increase in girth; also the year following a heavy fruitage, the growth would be found to be little, though the conditions were satisfactory. Thus it became apparent that the mere girthing of trees would not give the measure of the suitability of a year's weather. If the weight of the Wheat crop be taken as a standard to judge the weather by, it would be found equally faulty, for the influence of the previous season on the seed-corn affects to a great extent the crop of the year, nor is it possible to find a reliable standard in any other form of vegetation.

"DIE NADELHÖLZER," Von Dr. CARL FREIHERR VON TUBERF (Stuttgart, Eugen Ulmer), pp. 164, 100 illustrations. This is a treatise on the Conifers which are hardy in central Europe. The arrangement of the genera is the same as that adopted in ENGLER & PRANTL'S *Natürlichen Pflanzen Familien*. Each species is described, and many of them are figured. The illustrations are excellent, and constitute the most valuable portion of the work. The *Report of the Conifer Conference*, one of the most valuable treatises on cultivated Conifers, appears to be unknown to Dr. Von TUBERF.

HEMEROCALLIS FLAVO × MIDDENDORFI. — Dr. CHRISST, of Biele, obligingly sends us an account of the curious hybrid which has appeared in his garden at Liesthal between the two species above-named, both of which are cultivated by Dr. CHRISST. A resemblance to *H. Middendorfi* is shown in the leaf, colour of the flower, bracts, and short flower-stalk. The inflorescence and length of the tube accord more nearly with *flava*. The long gynose inflorescence is raised on a short scape. A coloured illustration is given in the *Transactions of the Natural History Society of Bremen*, 1897, xiv., H. 2.

SMITHSONIAN REPORT.—The annual report of the Smithsonian Institution at Washington is now published up to July, 1894, and contains, as usual, a considerable amount of most varied information, upon which we can but briefly comment here. In addition to matters immediately connected with the management and economy of the Institution, we find papers on "Astronomy," the "Waste and Conservation of Plant Food," "Weather Making, Ancient and Modern," "Physical Condition of the Ocean," "Ants' Nests," "Migration and the Food Quest," and other scientific subjects, treated, some technically, and the remainder in a more popular manner interesting to general readers as well as to advanced students.

MR. JAMES BAGNALL.—The author of the *Flora of Warwickshire* has accumulated material for the production of a flora of the adjoining county of Staffordshire; and now that, as we understand, he will have more leisure to devote to his botanical labours, we may look forward to as critically good a flora as that of Warwickshire.

LANDSCAPE GARDENING AS AN ART.—In *The Century Illustrated Monthly Magazine* for May, in an article on Professor SAROENT'S beautiful suburban residence in Brooklyn, Mrs. G. VAN RENSSLAER makes the following remarks:—"All the science, all the patience in the world, will profit a landscape-gardener little if his sense of beauty has not been developed by the persistent observation and study of

beauty both in Nature and in Art. An artist in gardening is not born ready-made, or fostered by scientific acquirements, my more than an artist with paint or chisel. On the other hand, all the artistic instinct, all the artistic training in the world, will not make a man a good landscape-gardener unless he has much scientific acquaintance and much practical experience with plants." After showing how these general remarks bear special reference to the subject of her paper, the author says further that:—"Landscape-gardening is a genuine art, an independent art, a very difficult art, and one which demands much knowledge of other than artistic kinds. No superficial amateur, and no professional man of one-sided training, can create a really fine country place of a highly-civilised and polished sort, perfectly adapted to the needs and tastes of its owners, entirely appropriate to its situation, completely realising the natural possibilities of its site, displaying the full resources of modern horticulture, delighting the eye with pictures of the most diverse kinds, and satisfying it by their combination into a harmonious whole. The genesis of a country-place like Holm Lea requires the mind of a scientific botanist, the hand of a practised horticulturist, the heart of a lover of Nature, the eye of a trained artist, and, besides all these, the beautiful patience of a Job."

THE TESTING OF NEW VARIETIES.—A recent number of the *Revue Scientifique* has a note, not merely upon the value of new varieties of economic plants, but upon the necessity for thoroughly testing these before publishing authoritative statements with regard to their properties and capabilities. To quote M. LITSCHNER, whose experiments in Germany are detailed in the *Experiment Station Record (Illinois)*, "it is only after a range of seasons and cultivation treating with the same variety, that a definite result can be attained;" and it is only after comparing different varieties for years, that it is possible to assign to them a relative position as regards their yield, or from any other point of view. Thus, in Illinois, nine of the principal varieties of Mize were subjected to a continuous trial for eight consecutive years. Each season a position was assigned to each variety according to the abundance of the yield (under identical cultural conditions, &c., of course), and at the end of the eighth year they were classified according to the total results. The following table includes the yearly results; the first column gives the name of each variety, the others the relative position of each variety in the year under consideration, the last column their places according to the total of the several results:—

Variety.	1888	1889	1890	1891	1892	1893	1894	1895	Average Height Years.
Loaming ...	2	2	3	4	3	7	1	4	1
Burr White ...	1	4	2	3	4	2	2	5	2
Clark Ironclad ...	9	3	6	5	2	4	8	1	3
Champion (White Pearl)	8	1	1	1	6	1	4	6	4
Legal Tender ...	3	5	5	8	7	8	5	4	5
Murdock ...	6	8	4	6	9	6	7	3	6
Edmonds ...	4	6	7	7	8	9	6	2	7
Riley Favorite...	5	7	8	9	1	3	3	7	8
Golden Beauty ...	7	9	9	2	5	5	9	8	9

It will be noted that, in the first year, for instance, the varieties which now occupy the third and fourth places were the poorest of all; and that which is on the average first all one year in to the seventh rank, having but once occupied the foremost position, while No. 4 was four times found in the first place. This table is instructive, and the conclusion to be drawn from it evident. It is only in time and by means of successive trials that reliable conclusions can be formulated.

"FLORAL ALBUM OF CONFERENCE DAFFODILS.—Mr. HARTLAND, Tulip and Daffodil grower, Cork, Ireland, is publishing his *Floral Album of Conference Daffodils*, second edition, 1897, commemo-

rative of the Victorian Era, and containing some fine additions to an already beautiful work of art. It will also contain a Jubilee poem by the proprietor, entitled "Sixty years of a Starlit Age," illustrated with likenesses of the Queen, Watt, Stephenson, Edison, Röntgen, and others. The work is copyright, and limited to 250 copies.

THE DEVON AND EXETER GARDENERS' ASSOCIATION.—The summer excursions of this Association will take place on Wednesday, July 14. By permission of the Earl of Mount Edgcumbe, the party will, an hour after arrival at Plymouth, to permit of lunch being partaken of, proceed to Mount Edgcombe, where, under the guidance of Mr. RICHARDS, the Head Gardener, the beautiful grounds and gardens of that famous estate will be inspected.

"THE JOURNAL OF THE ESSEX TECHNICAL LABORATORIES" for March and April contains articles on the use of Bordeaux Mixture, in which it is shown that a largely increased crop results from spraying, and that an increased food-value is noticeable in the tubers from the sprayed portion of the experimental plots. The average increased yield, after spraying, amounts to 1 ton 5 cwt. per acre, at an average price of £2 per ton, the cost of spraying being computed at 15s. per acre. A study of *Dendrobium nobile* comprises the minute anatomy of the whole plant, as well as some useful cultural details. We would point out the desirability of instituting comparative studies of this character. The structure of the leaf in this order affords the most remarkable variations.

THE FRUIT PROSPECTS at the present time are by no means reassuring. The general experience has been an abundance of bloom upon most kinds of hardy fruit trees; but subsequent weather has had such a destructive effect upon the blossoms that a considerable proportion has fallen. Plums, so far as we have observed, are exceedingly rare, and Cherries also. Pears are not more than a light crop, whilst Apples will possibly be rather more numerous. When visiting Ruxley Lodge recently, the residence of Lord FOLEY, at Esher, we were pleased to see that an excellent crop of Peaches is likely to be obtained from the walls outside. At present the trees carry a splendid crop, and this after much thinning, and the trees and foliage being in capital condition, there is little probability of injury after this date. Mr. MILLER, the gardener there, is very attentive to the needs of his Peach and Apricot-trees out-of-doors, and rarely does he fail to obtain a crop, though Apricots are not plentiful this season. The Peach-trees are removed from the walls each winter, and by means of stakes are kept as far from it as possible until the swelling of the buds compels them to be trained. By this old but excellent practice the flowers are retarded until the worst of the frosts are past, and by the use afterwards of ordinary fishing-nets or similar material, danger is reduced to the least minimum possible. The fruit-trees inside at Ruxley are looking well, and Vines, Peaches, Nectarines and Figs, promise excellent crops of fruit.

EDUCATION.—Last month Sir JOHN GORST spoke at Gilton on the question of education in rural England, and told his hearers that they could not successfully compete in agricultural products with Continental nations, who sent many things to England which ought to be grown at home. Denmark at the beginning of this century was one of the poorest countries in Europe, and to day it is one of the richest, because Denmark supplies the English people in manufacturing towns, and even in country districts, with butter, eggs, and bacon, which Englishmen ought to produce themselves. The people of Denmark attribute their prosperity to the education received in the high schools, where every boy and girl is kept until fourteen years of age; besides this, there are winter and evening schools in that country, where any one can study until he is thirty. Sir JOHN also pointed out that the children in rural France were kept at school in the same way, and that, in addition to the money expended for general education, France devoted a million dollars a year to special teaching in agricul-

ture and horticulture. Instruction in these arts, he said, was obligatory even in primary schools in the country, and all over France they had higher schools, schools of practice and itinerant teachers, and experimental plots at convenient distances, where demonstrations were given. There are more than 3300 of these experimental gardens in France. Sir JOHN thought it was a mistake to endeavour to fit country lads for third-class clerkships in the cities instead of fitting them for country pursuits, since the restoration of prosperity in the rural districts depends upon the intelligence of the country population which furnished the workers, *Garden and Forest*.

WREATHS AND GARLANDS.—Mr. TALFOURD ELY read a paper at the Archaeological Institute on May 5, on "Wreaths and Garlands," with especial reference to Greek and Roman usages. He pointed out that the English limit the use of wreaths to funeral purposes, whereas among the ancients the wreath was a sign of feasting and joy. In classic times, the dead were, indeed, crowned, but crowned as still partaking of the pleasures of this world, bodily pleasures being held in nowise incompatible with religion. Religion originally prompted the use of the garland, which may have been connected with the widespread belief in the supernatural powers of trees and plants. Wreaths were employed as bandages to assuage headache resulting from debauch; and certain plants, as the Myrtle and the Rose, were believed to exercise a prophylactic power against the effects of wine. The Greeks, too, were fully sensible of the beauty of flowers, and floral decoration plays a great part in Greek poetry, from Sappho downwards. Among the early Romans, on the contrary, the use of wreaths in public was strictly limited to religious functions and marks of distinction connected with services performed to the State, such marks of distinction being largely derived from the Etruscans, who made great use of wreaths. In Greece the simple wreath of Olive, &c., as a reward for athletes, superseded the prizes of intrinsic value offered in heroic times. In the fifth, and still more in the fourth century, crowns, usually of gold, were awarded to successful statesmen or warriors. Wreaths of Laurel, Myrtle, Vine-leaves, or flowers were commonly worn at Symposia, and are thus represented on vases. For the most part, of course, these wreaths have perished, but some have been preserved in Egypt. The manufacture of garlands gave employment to many, and its processes may be seen depicted in several Pompeian pictures. The gold crowns were frequently modelled in the form of leaves, as Ivy, &c. Other materials for wreaths were wool and artificial leaves, and flowers of horn or silk. Though the origin of the use of wreaths is lost in antiquity, its primary purpose was probably religious; and the practice of crowning the dead may have arisen from the deification of ancestors.

CAIRO FLOWER SHOWS.—A horticultural show will be held, it is announced, in the Esbekieh Gardens, Cairo, from January 14 to 16, 1898. The exhibits will include flowers in pots, foliage-plants, cut flowers, and bouquets, window and table decorations, exhibits (pot-flowers, plants, fruit, vegetables, bulbs and seeds) sent direct from Europe; fruit, vegetables, preserves, and pickles. Various awards will be made in these several divisions, and intending exhibitors can apply for "forms of application for space" at the Hon. Secretary's office, in the grounds, before December 29. We have also received intimation of a Chrysanthemum show to be held at the Continental Hotel, Cairo, November 19, 1897. The entries will be classed as follows:—Pot-plants, six of each variety; pot plants, twelve heads of each variety, and as Chrysanthemums, Japanese, incurved, dwarf, and new variety respectively. Application for space should be addressed to the Hon. Secretary-Treasurer, W. WILFRED CAREY, Esq., Kasr-el-Douhard, Cairo.

THE SWANSEA HORTICULTURISTS associated themselves together about a year ago for the purpose of meeting during the winter months to hear and discuss lectures upon horticultural subjects. They

are now turning their attention to exhibiting, and a schedule to hand informs us that the Swansea Horticultural Association will hold its first annual exhibition on August 26 next. Thus far, so good; and we hope that the society will continue the debates, for which it was originated, and not be led to throw all its energy into promoting exhibitions, as some others have done. The president is Sir J. T. D. LUDWELYN, Bt., who is well known as an enthusiastic patron of horticulture. The schedule is sent us by Mr. T. FOOTE, one of the hon. secretaries.

INJURY TO THE VINE IN FRANCE.—A Reuter's despatch from Auxerre states that the Vine, fruit, and vegetable crops in the city and district have been ruined by frost, the damage in the department of the Yonne alone being estimated at 20,000,000*fr.*

FROZEN CAPE HEATH.—The *Norman* brought home, says *The African Critic*, an immense wreath, composed of Cape Heath, for the Emperor of GERMANY. It was frozen in a solid block of ice, and the case which contained this treasure was so gigantic that the *Athenian* was unable to take it into her ice-chamber. It was sent on to Hamburg.

UNIQUE CLOCK GARDEN.—A correspondent of the *New York Herald* writes as follows from Berkeley, California, on May 8:—"A clock garden, whose flowers will tell the time of day, is being planned by Instructor H. A. OUSTERHOUT, of the botanical division of the University of California. He proposes to cultivate such a garden on the University grounds, arranging the plants in dial form. The hours and half hours are to be indicated by the successive opening and closing of buds. The work of producing a clock garden will be a long task, as it has never been attempted in California before, and a great deal of experimenting will be necessary to find out just what flowers should be put around the circle to indicate time. The garden will be the only one of the kind in the United States. 'By getting the right varieties of flowers we can mark all the hours and some of the half hours throughout the day,' said Mr. OUSTERHOUT, in describing the projected botanical curiosity. 'The flowers would be arranged like a clock, and in the early morning they would begin to bloom—the different varieties at different periods, according to the light and heat. Gradually the opening of flowers would extend around the circle, until at night the circle would be all in bloom. The first garden of the kind was at Upsala, Sweden, by the Botanist LINNÆUS. There is also one in Paris, and efforts have been made to cultivate them in the Eastern States, but owing to the elements they have not been very successful. I think the Californian climate is suitable for such an experiment. The questions that remain to be solved are as to what flowers are best here, and at what time of day the different varieties will bloom here.'"

M. MOTTET has been appointed manager of the experimental grounds of MM. VILMORIN, ANDRÉUX & Co., at Verrières, near Paris, in the room of the late M. VERLIER.

THE NATIONAL CO-OPERATIVE FLOWER SHOW is fixed for August 20 and 21 next, and, as usual, it will be held at the Crystal Palace. From the schedule it appears that the prizes are increased to £350 in cash, besides Gold, Silver, and Bronze Medals, and other awards. There are to be fourteen judges, including Mr. A. F. Barron, Mr. Coomber, Mr. R. Dean, Mr. T. W. Sanders, and Mr. D. T. Fish. Mr. Geo. Waugh will again be Hon. Director of the show, and Mr. Ed. Owen Greening as Hon. Secretary. Copies of the schedule may be obtained from the Hon. Secretary, at 3, Agar Street, Charing Cross, W.C.

VALUE OF A NITROGENOUS MANURE.—Mr. F. J. R. CARULLA, Chairman of the Nottingham Section of the Society of Chemical Industry, has just issued a paper, in connection with the Iron and Steel Institute, on the "Agricultural Value of Sulphate of Ammonia from Blast Furnaces." The writer deprecates the lack of positive knowledge evinced by farmers on the subject of the properties and values of various nitrogenous manures, and therefore is

desirous of contributing some reliable information on the subject. Mr. CARULLA is a champion of sulphate of ammonia, claiming that nitrate of soda owes its popularity as much to continual recommendation as to intrinsic merits; that the former substance (sulphate) is equally valuable but less widely known; and also that, being formed largely in blast-furnaces, ironmasters should take every opportunity of insisting on the merits of it as a manure, and be ready to dispose of it on terms mutually advantageous to themselves and to agriculturists.

ORCHID PRICES.—We are informed that the plant of *Odontoglossum crispum* var. *heliotropium* awarded a First-class Certificate at the meeting of the Royal Horticultural Society on April 27 last, was sold by auction on Friday last for 135 guineas.

FLORAL DECORATIONS AT THE ALBERT MEMORIAL.—The First Commissioner of Works having given his consent to "a floral decoration of the base of the Albert Memorial in Kensington Gardens for June 22," we are informed that a committee is being formed to carry out the scheme. I would suggest that an appeal be made to the public for the gift of flowers and shrubs, in pots, for this purpose, such gifts to be subsequently distributed amongst the London hospitals, as a fitting memento of the Diamond Jubilee Celebration. *S. G. Catter, 10, Fokett Road, S. W.*

PUBLICATIONS RECEIVED.—From the University of Illinois Agricultural Experiment Station, Urbana, Bulletin No. 47 (March), *Broom, Corn-smut*, dealing with the nature, effects, and treatment of this pest; and also Bulletin No. 43 (April), *The San José Scale in Illinois*, an account of one of the most pernicious and generally injurious insect enemies, whose gradual and sometimes unperceived attacks sometimes ruin whole orchards (in America) before it can be checked.—*Annual Report on Government Gardens and Parks in Mysore for 1895-6.* We learn from this that during the past season "the weather was seasonable for field and garden crops," and that progress and improvement were manifested in both the management and condition of the gardens.—*Books of To-day, and the Books of To-morrow*, by ARTHUR PENDENTS, May.—*The Book and News Trade Gazette*, May 8.—*The Bee-Master*, May 15; the first number of a new periodical, to be published fortnightly, and devoted to the fascinating and often remunerative bee industry.—*Mothers and Daughters* (A. W. HALL, 28 to 32, Hutton Street, Whitefriars), formerly a monthly, will in future appear as a weekly publication. The first of these parts is dated May 29, and known as the Queen's Birthday issue. It is appropriately accompanied with a portrait of Her Majesty (25 by 20 inches), which forms an acceptable supplement. A smaller picture appears on the cover, and this, as well as the larger plate, are both pleasing and faithful likenesses.—*Cassell's Saturday Journal* is full, as usual, of interesting items.

NURSERY NOTE.

ORCHIDS AT MR. W. BULL'S, KING'S ROAD, CHELSEA.

We found here, on the occasion of a recent visit, the annual display of Orchids in the long, narrow, span-roofed house at the north side of the Palm house. The effect was but little dissimilar to that which Mr. Bull has delighted his patrons for some ten years past, and which never seems to pall on them, or fails to interest them. The scene reminded one of the recent display of these plants at the Temple gathering, but consisting on each side of the house of two banks of flowering-plants. The view presented was observed at a glance from one end to the other, and there was, moreover, the advantage of greenery of various sorts, that was absent at the Temple, to act as a foil to the mass of colour. It may be stated that the effect is obtained chiefly by the abundant employment of *Miltonia vexillaria* in white and all shades of pink; *Cattleya Mossie*, C. Meudell, *Dendrobium*, *Cymbidium Lowianum*, *Odontoglossum*

crispum in rich variety; *O. citrosunum*, with numerous *Masdevallias*, *Cypripediums*, *Cymbidiums*, *Epidendrum*s, and *Lælia purpurata*.

One of the finest of the *Odontoglossum crispum* noted was one rejoicing in the cognomen *stupendum*, individual blooms of which measured $3\frac{1}{2}$ inches across; the segments of the flower are of great width, prettily crimped and of much substance. Several other *crispums* were noted which had excellent points, but none equalled this grand variety. Differing greatly from the preceding variety is *O.*

next comes *C. Mendeli formosa*, a handsome variety, whose lip is of a pale tint of purple. *Cattleya Mossii* and *C. Mendeli* abound, nearly all being striking in some particular; *Lælia purpurata*, in a variety of forms and of colour, is also plentiful, indeed, few Orchid nurseries can furnish such fine *Lælia purpurata*, and so well cultivated as the one under notice. *L. p. versicolor*, a not very large specimen, but unique as regards its tints, had a very high figure placed upon it. The beautiful *L. p. bella*, white in all parts of the flower excepting the lip,

species of *Cologyne* noted were *Dayana* and *Mas-sangeana*, both with pendulous racemes of dull-coloured flowers.

Masdevallias were numerous, both in those more strictly decorative species, and others of interest chiefly for the minuteness of their flowers and quaintness of their forms. We may mention *M. severa*, *M. Chimera Winniana*, *M. c. Roezlii*, *M. peristeria*, and *M. Chelsoensis*.

A form of *Cymbidium Lowianum* was remarked in which the sepals and petals have much darker tint;

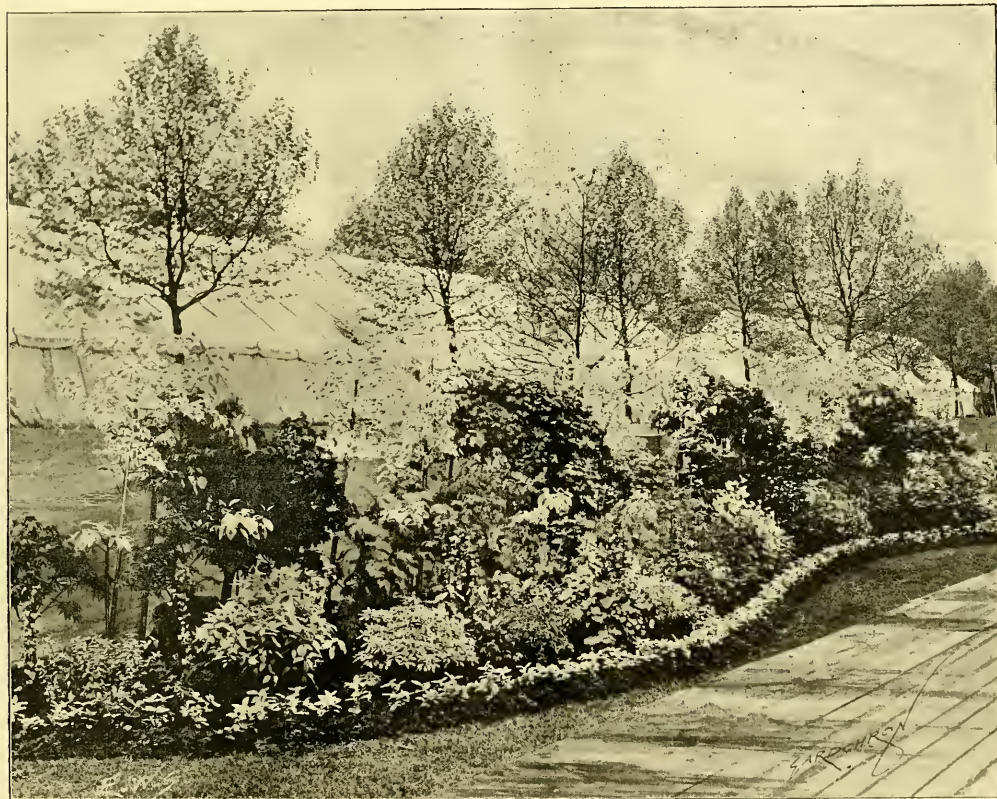


FIG. 137.—GROUP OF HARDY TREES AND SHRUBS.

(Exhibited by Messrs. Fisher, Son, & Sibray, Sheffield, at the Temple Show, May 26-28, 1897. See Report in *Gardeners' Chronicle*, May 23, 1897.)

cuspidatum platyglossum, with its stellate form of flower and brown spotting on a yellow ground colour; a form of *O. Ruckerianum* of much beauty, and differing from the type in the suffused pink ground and the wider segments; similarly differing from the typical form in its ground colour is *O. citrosunum* concolor, of which several examples were observed. A good plant of *O. hastilabium*, with fine purplish-brown cross-barring, on a creamy-white ground, was noteworthy; as was likewise one of *O. mulus crocatus*.

Of *Cattleyas Schroderae* var. *Empress* was a striking example, of the faintest lilac tint with the orange blotch in the throat traversed with crimson lines;

which is of a very pale shade of purple, would claim a host of admirers; *L. p. fulgens*, with lip of rich tint, would appeal to others.

Among *Occhidiums* may be named *tetrapetalum*, a small plant furnished with a small spike bearing five flowers of a uniform pale mauve tint, took the eye at once; as did also *O. pulchellum*, which has smaller flowers, the colour of which is white tinged with lilac. *O. papilio* we always expect to see in its place before the mirrors. A splendid mass of *Odontoglossum macranthum hastiferum* was remarked. A plant of *Cologyne speciosa major* presented a pretty study in different shades of brown, as also did *C. pandurata* in light green and black. Other

on the upper surface than those of the type. The handsome and strange-looking *C. tigrinum* was in evidence; as was *Pleurothallis ornata*, whose minute brown flowers possess pendulous fringes of white hairs.

The floriferous *Thunia Winniaea*, the singular-looking *Nanodes Meduse*, the showy *Epidendrum Wallisii*, *Brassia maculata*, which differs somewhat from, and may be said to be an improvement upon, *B. verrucosa*, several *Dendrobium*s, including *D. infundibulum*, *D. l. Jaimesianum*, and others of this species, differing in the colouring of the patch in the throat, it being orange in some, lemon in others, &c. *D. transparens*, *Trichopilia tortilis virginalis*, whose

throat and lip are of pure white. Of *T. tortilis* there was some variety, the more marked features, however, being the colours of the twisted petals and sepals. A plant of *Scuticaria Steelli* on a raft had one expanded blossom, and a plant of *Chysis bracteosa* had several on a short spike. Plants in flower were remarked of the rare *Odontoglossum Reichelheimii*, the still rare *Vanda Parishii*, *V. P. var. Marriotiana*, *Acrias Lindleyana*, *A. Honletii*, and *A. Fieldingii rubrum*, a somewhat scarce plant; *A. ampullacea* var. *Moulouensis*, with short spikes of rich purple and crimson-coloured flowers; *Epidendrum Fredrici Guillemi*, whose corymbs of purp-purpl flowers stood up conspicuously among other plants; *Odontoglossum nebulosum parlium*, *Cattleya bulbosa*, and *Oncidium phymatocidium*.

This unique collection of Orchidaceae plants will be open to inspection during the entire London season, the interest of the beholder being sustained by the addition of fresh plants from the storerooms of the nursery.

HOME CORRESPONDENCE.

DARWIN TULIPS.—Is it true that these so-called "Darwin Tulips" were raised by Myneher Kelrage, as stated by your correspondent, "D.," on p. 341 of the issue for May 22? I am led to ask this question, because, just at present, evolution is "in the air," so to speak, and we must be careful not to overshoot the mark. Here is exactly what "D." says:—"The raiser was Mr. Kelrage, the well-known bulb-grower, who, having evolved this beautiful section from out of others, by intercrossing and hard selection, feeling that the section presented an admirable illustration of the progress of evolution, named them Darwin Tulips, in honour of the great apostle of evolution." That all the statements made in this paragraph are true I doubt very much! What proof has "D." that this strain of Tulips was raised or evolved "from out of others" (*sic*), by either intercrossing or hard selection? Will "D." or Mr. Kelrage kindly explain! *P. W. B.*

THE PEACH CROP IN PEMBROKESHIRE.—As regards the state of the Peach-trees on walls out of doors at the present time, it is such, that in many parts hereabout the crop of fruit will be very scanty where there is no efficient protection from glass copings, shutters, or heated walls. The damage has not accrued from the severity of the frosts that have visited us, as from the harsh winds and the showers of hail, and snow and rain which have prevailed nearly every day since the blossoms began to expand. This year the Peach blossom began to expand earlier than usual, owing to the breeze of frost, but hail, and the foliage has become blighted from the combined effects of cold easterly and northerly winds. When once the leaves are thus crippled, they become liable to infestation by various insects that prey on their juices, and some long time elapses ere the trees are restored to health, no matter how skillfully they may be treated; and it often occurs that the gardener is accused of giving them improper treatment, but it is not always possible for the gardener to strive successfully against the weather; and I can truly say that a worse spring for the gardener to contend with has not occurred for several years past. *W. Cuvill, Penally, Pembrokeshire.*

PROGRESS OF THE CYCLAMEN.—On this subject a few facts and personal recollections may be of interest. Fifty years ago Cyclamens were mainly confined to C. *Ceum*, C. *europaeum*, and C. *alepicum*; this last, which had petals strongly reflexed and of delicious scent, I take to be the original C. *persicum*, a name generally given to species from Cyprus, but the original has become blighted from the more northern Asiatic origin. It is well known that the Mediterranean littoral and islands abound in Cyclamen, but are not its exclusive home. I have seen some on the high Swiss Alps, at an altitude of 6000 feet; and from Barbary I had one called C. *africanum*, its chief feature being the enormous size of its bulbs, which would have made a great sow-bread repeat; the flowers being of no particular merit, its cultivation was discontinued. C. *vernum* and C. *hederifolium* may be considered British species; thus, Europe, Asia, and Africa contribute to the interesting family, and may we not include America in a first cousin, *Dioscorea Meadia*? I come now to the present large-flowered varieties. In the fifties and

early sixties, the most complete collection of Cyclamens to be seen at the nursery of Messrs. E. G. Henderson & Son, St. John's Wood (now part of Lord's Cricket Ground). In their service was James Edmond's, a cultivator *facile princeps*, who subsequently went into business on his own account at Hillingdon, near Uxbridge, whence, up to his decease a few years ago, he produced and exhibited from time to time most of the finest varieties now to be seen, and to him should be assigned the place of honour. *Pulmann qui meruit ferat*. The best strains are still grown in this neighbourhood, though cultivators elsewhere are making rapid strides. My own opinion is that C. *grandiflorum* vars. proceeded not from C. *persicum* (*alepicum*), but are developments from C. *latifolium* of Greece. Careful cross-fertilisation, and above all the cultivation of natural "sports," may produce startling results. The embossed-feathered variety of Messrs. Hugh Low & Co. is an elegant novelty. *S. A., Harlesden.*

RENAISSANCE OF THE HOLLYHOCK.—Having read the remarks of your correspondents "D. T. F." and "D. L. M." on the above subject, may I ask seriously if they are poking fun at us? Is *Puccinia malvacea* a thing of the past? It is banished from Scotland, it is much in evidence in England. For ten years I have been trying to get some healthy Hollyhocks, but although I have bought seed and plants from all the best sources in England, and we are on a cool soil 450 feet above sea level, still the Hollyhock disease prevails. I tried the Bordeaux Mixture without any results. May I ask if this another case like the re-discovery of Garibaldi Strawberry in that little garden in Edinburgh? I may say that I have been ill, and I send my *Gardener's Chronicle* to my sons in Australia, otherwise I should have written earlier. We are much obliged to brother Scots over the border for looking after the Pansies, and for the fine race of Violas they have raised for us, and if they are doing the same for the Hollyhock, I wish them good luck in their efforts. In speaking of Pansies, you never see such Pansies now as Thompson of Iver, Turner of Slough, Bragg of Slough, and the Halses of Drayton, father and son, used to grow in 1855 and 1854. About the latter date a fungoid disease overtook them, and the thing was over in England; and with respect to Hollyhocks, in 1853 I was helping a grower of Hollyhocks for show when a lad, and I recollect handing up to a tall man on a tall pair of steps, canvas shades about 5 feet long, made on hoops, to shade the show spikes, about 4 feet 6 inches long, and every bloom perfect—the main stalk was at least 16 feet high, the plants had, as a rule, five strong stakes, like hop-poles. Of late years I have not been able to grow a starveling 6 feet high, that is, not with any degree of beauty. Before we get far on with the renaissance, I may remember the past. I think it was in the autumn of 1853 or 1854, at the same place, a long range of pits were filled with cuttings in small pots, about 30,000; the disease came and took them, and I do not think a dozen were saved. Of course, at that time fungoid diseases were not understood; it was known a disease was there, but chemical remedies were not tried. Previous to that Hollyhocks would strike like weeds, and the same disease is with us to-day; if the men of the renaissance can name a cure, then they are worth reading. *R. M., Newbury.*

TWO GOOD WINTER TOMATOS.—Perhaps some apology is needed for introducing the subject of Tomatos, after so much has already been written in respect to the peculiar merits of varieties. Knowing, however, that there are establishments where Tomatos are required almost daily throughout the year, is my excuse for recommending to the readers of the *Gardener's Chronicle* the varieties "Laxton's Open Air" and "Sharp's Plentiful" as being the best I know to produce fruit during the winter and spring months. In the first place, I ought to mention that I do not receive the seed direct from the nurseries, but they were given to me by a neighbour under those names; and not having grown either of the varieties in previous years, I am unable to vouch for the correctness of the names. I have enclosed a few fruits of each variety for your inspection, not because ripe Tomatos are a novelty at this season, but more for their correct nomenclature. The corrugated fruit is we believe correctly named Laxton's Open Air, the other is one of the Perfection type, and may or may not be Sharp's, these being alike in form and colour. Early in the seed was sown in the end of May, 1896, and the plants afterwards shifted on, and potted into their fruiting-pots, i.e., No. 8 or 11-inch pots in the usual manner, kept out-of-doors till the first week in the month of October, and then placed in a light,

airy, three-quarter-span-roofed house. The plants at that time were carrying from six to eight clusters of fruits, some of which were beginning to ripen as shown by the change of colour. A few more trusses of fine bloom set before the end of the year, but from that time till the end of the month of February, not many flowers were fertilised. From that time, however, the plants began to produce large clusters of bloom, which set, and the fruits grew fast and ripened quickly. An important point with us is to have ripe and ripening fruit during winter, which can only be secured from strong, not so sappy plants, carrying six or eight trusses of fruit, the earliest of which are changing colour by the beginning of October, and growing them in such a kind of house as that described. The stem of each plant should be trained close to the roof, but the leaves not touching it, the temperature being kept at about 55° till the beginning of April. The fruits at this degree of warmth are slow in ripening, and the supply is in consequence much prolonged. *Geo. Woodgate, Rolleston Hall Gardens, Burton-on-Trent.*

A GOOD EXAMPLE.—The question of the hours of labour for gardeners crops up from time to time, and the tendency now-a-days is to recognise the fact, that compared with many other callings, gardeners are hardly dealt with in this respect, and this is quite as pronounced in the numerous trade establishments as in private gardens. In the case of nurseries, the practices have for a long time set an example to London, by curtailing in many instances the hours of labour on Saturdays, and now it is a pleasure to record the fact that Messrs. J. Veitch & Sons on Saturday, May 29, marked the commencement of a new era by closing their establishment at 4 o'clock. Our Royal Family are well known to take much interest in the working portion of the community, and to the other London nurserymen, particularly those who make a public display of the royal arms, we say, "go thou and do likewise." *J. S.*

FRUIT-TREE GRAFTS FAILING TO GROW.—I have an unpleasant experience of this occurrence this year. I have one bed of about 10,000 Myrobalana stocks, all headed down at one time. My foreman, who is considered a good hand at his work, and has had thirteen years' experience with me, started grafting one side of the bed with Monarch; my son began the other side with the same sort. There was no difference in the grafts, as they were all grafted by a third person, and even worked himself out of the same box. Those done by the foreman are very bad—not half of them living; while those done by my son are growing splendidly, with scarcely one failure. There is no doubt one operator was more particular that the graft and scion should properly fit, and that those who tie and pitch-in have done their work well; for unless the latter is properly done, success will not follow, however well the graft may be put on. The conclusion I have come to is, that if only one person had grafted the bed of Myrobalana, I should have been the same way of thinking as "Northampton" is, namely, that the cold wet wind lasting so long was the reason for the failure. *Kent.*

—I have read the interesting note on this subject by a nurseryman in a recent issue of the *Gardener's Chronicle*, and am not surprised that grafts of fruit-trees have failed to grow in some parts of the country, for a graft of any kind exposed to the harsh winds of the past two months was sure to suffer much or little, according to the amount of exposure. In this district (Slough) the grafts of the Plum are fairly good, those of the Apple about three-fourths are alive; the Cherries are fairly good, *Acaecia* very bad; *Pyrus* bad, and *Pruuus* fairly good. I may state that we have a much better percentage of grafts where grafting-wax was used (Russian tallow and resin) instead of clay. *A. R.*

JANCAE HELDREICHI, ETC.—This difficult subject is now in flower, and as it has been very generally lost, and has practically disappeared from the trade catalogues, it may be worth while giving the conditions which have led to success. I think they are moisture and drainage. I began by putting the plant under the usual *Hannadica* conditions—rocks in half shade, and horizontal position. The result was gradual wasting away, ending in death. I noticed, however, that no matter how curled up and withered the poor thing was, a shower of rain or a good watering over the root had for a time a magical effect, plumping the plant out to apparent health. Evidently it was far more of a moisture-lover than

Ramondia. So, having the luck to get a second plant, I put it in peat amongst stones on a steep slope in the bog; and on the top of the bank above it I constantly have a little water running. This penetrates through the peat to the roots of the plant, and then drains still lower, when I stop the flow. Under these conditions the plant flourishes, and has now two flowers more or less like a *Pinguicula*. On the same bank several plants of *Schizocodon soldanelloides* are growing. The leaves seem to me even more beautiful than those of *Galax* or *Shortia*. The plants have gone without protection through two winters, but they have both been mild ones. Can any one do any

burn flower garden, the many fine trees in the park and on the estate generally, and the remains of the old avenues, planned or planted by Le Notre, link Arniston closely with the past, while abundantly satisfying the modern wants of the universally respected family of Dundas, one of the most honoured names in the county. D. T. F.

TREATMENT OF SPRING-FLOWERING BULBS.—Why not leave them alone? Perhaps no garden is more completely crammed with bulbs of all sorts than our own, for all the beds, the herbaceous borders, the odd places under the hedges, the kitchen garden,

alone the better they like it. At the present time we have several old strong clumps of Tulips growing up in the middle of a walk—more power to them, we let them grow and walk round them. The best way to treat bulbs is to leave them alone, and not waste time in digging them up and spoiling them. We have carried out this system for the last six years, and all who see the result go and do likewise. The beds are dug up, and any bulbs disturbed are quietly put back again. We have tried the digging up, drying, and replanting, and it is a dismal failure. *Thos. Fletcher, Grappenhall, Cheshire.*

PTERIS AQUILINA, OR BRACKEN, ITS PROPAGATION AND DESTRUCTION.—Several of your correspondents have recently written on the above subjects, notably "D. T. F." p. 349 and previously. I have no wish to enter into any controversy on the subject, but it seems to me that the chief difference between your learned correspondents and an ordinary gardener is this. Judging by the advice given, your correspondents evidently wish to make work, whilst an ordinary gardener tries to get the work done as cheaply and as expeditiously as possible. For instance, one or two of your correspondents seriously advise shifting tons of earth containing the roots of the bracken. If it was to benefit the poor of the district in the interest of a wealthy employer, that alters the question; but if business is meant, I should advise the gathering of the ripe spores in the autumn, sowing them in shallow pans, and placing these in a cold-frame. With about two dozen seed-pans you might raise 10,000 plants, and in the following summer they would be fit to plant out anywhere on prepared soil. About one cwt. of soil used in the above manner, would have a better result than 100 tons removed on your correspondent's plan. And if it is destruction you aim at, have it mowed down at once, and as soon as it sprouts again, and it will "bleed to death." *R. M., Newbury.*

KEW GARDENS.—I fully agree with all your correspondent "A. D." says concerning Kew Gardens, but I ask why it is that no facilities are given to see them? I cannot walk over half of them, nor can one person in ten, without being so fatigued as to lessen all enjoyment. In Paris, in the Jardin d'Acclimatation there is a miniature railway, which runs through the shrubs and trees of the Bois de Boulogne, so as not to be unsightly, and a small charge visitors are carried. Now if it is found necessary in so small a garden, surely it is much more needed in such an extensive and beautiful place as Kew. Few persons are able to walk over the 240 acres of Kew, especially when you add to this the distance from the steamboat or railway station; verily, we have much to learn from the French in such matters. The last time I visited Kew I went to see the magnificent Rhododendron valley, the Azaleas and Magnolias, and I was so fatigued I could scarcely get back to the railway station. Now, this was only a small part of these magnificent gardens. Add to this the late hour they are opened to the public, and the whole appears to me so farcical as not to be credible. These gardens (thanks to the successive Directors) are the finest in the world; unfortunately, they are comparatively unknown, yet look at the great expense of keeping them up. Surely the public who pays could be more liberally admitted without sacrificing science. *George Davison.* [There is practically now no difficulty about early entry to professional gardeners. Ed.]

EARLY-FLOWERING STRAWBERRIES.—Entering Mr. Carmichael's garden in Edinburgh on May 25, I was surprised to find his two Strawberries, the Queen of Denmark and Princess of Wales, in blossom; the only other in flower in the same garden being Garibaldi. I have not noted any other variety in the open air in bloom in this district, nor at Ockenford on Saturday, May 22, the Strawberries, as well as other kinds of fruit, being abnormally late. A feature of these two new Strawberries is the moderate size of the leaves, and the shortness of the leaf-stalks. These qualities are valuable in open-air crops, but specially so for forcing. A stubby habit saves time, as well as economises space; hence largely the popularity of Keen's Seedling, Garibaldi, and Intest-of-All. I have already mentioned the capital row of Garibaldi I seen at Ockenford the other day. The single lio of plants on a shelf was an almost continuous "coridon" of berries, with just enough foliage to form a background for them. Close by these, and growing under similar conditions, was a batch of Royal Sovereign, carrying possibly more leaves than fruits, and their long foot-stalks throwing the foliage up against the glass. The lesson is obvious. *D. T. F.*



FIG. 138.—GROUP OF CANNAS.

(Exhibited by Messrs. Cannell & Foss, Swanley, at the Temple Show. See Report of the Show, *Gard. Chron.*, May 29, 1897.)

good with *Cypripedium guttatum*? This is a Siberian species, which should be easy enough. But I lose it everywhere. *Arthur K. Bulley.*

APRICOTS UNDER GLASS AT ARNISTON, PORTLAND.—Permit me to confirm all that Mr. Temple, of Carron House Gardens, said in a recent *Gardeners' Chronicle* as to the excellent Apricots, Peaches, Nectarines, and other fruits obtained last year at Arniston by Mr. McTaggart. I had the pleasure of visiting Arniston about the same time, and it seemed impossible to get more or better fruit from a somewhat limited area than were grown in that fine old kitchen garden. Grape Vines, and all other kind of fruit, were likewise well done there; while all uncropped land in the kitchen garden is ridged up every winter, and made fit to carry the mass of vegetable crops. The dell, arboretum, the

and everywhere, have as many bulbs as they will hold, and, from the Snowdrops to the late Tulips, there is no interval. The *Narcissus poeticus ornatus* and some varieties of *Daffodils* increase so rapidly that we are compelled to dig them up and divide them, but all the others are left severely alone. A bed of Dutch *Hyacinths* planted three years ago has had as fine flowers as the new ones planted this year, with the advantage of being about three weeks earlier. Our bedding-out is done without interfering with the dying foliage of the bulbs, which is cleared off as soon as it becomes loose, or if the ends become shabby, they are cut partly off. There is an intermediate, rather untidy season for two or three weeks, which is partly hidden by succession varieties of bulbs on the same beds, but even the dying leaves are better than bare soil, and we are more than content with the result. In our experience, the more bulbs are left

VEGETABLES.

LATE BROCCOLI.

THE usefulness of late varieties of Broccoli, especially in a season like the present, when Cauliflowers, unless grown under glass, will be two or three weeks later than usual in producing heads, will be generally admitted by those who have to supply the kitchen with home-grown vegetables. After testing at different times most of the Broccoli in cultivation, I have come to the conclusion that the variety named Methven's June is so far the latest obtainable, as the supply from it will extend to probably a fortnight from the present time (May 25). Veitch's Model, a remarkably dwarf and hardy Broccoli, grown on the same quarter as Methven's, is just finished, the last head being cut at this date. No doubt much might be done by selection where time and circumstances permit of the seeding of the very latest heads. In my quarter of Methven's June, I find this year a stray plant, differing in appearance and habit from the type, and with the tivy head but just forming. I intend to seed this, and should the stock resulting come true, it will, I hope, prove to be at least a fortnight later than Methven's June. II. [Kindly say what dates are the most suitable for your district for sowing these and other late varieties. Ed.]

SCOTLAND.

MESSRS. DOBBIE'S NURSERIES.

AFTER a journey by rail and sea to Rothesay, I soon found myself inspecting 50 acres of well-stocked nursery ground. Among many other notable features was a fine new border of all the choicer herbaceous plants, flanked at the back with climbing Roses. Here and there, so as not to overshadow the herbaceous plants, a few of the Roses will also be thrown over the main walk that is carried along the lower side of the ground. Here, too, were over 2 acres of ground, deeply dug or trenched, manured, and roughed-up for growing the fine Dahlias; here, also, was an enormous number of beds of Violas, Pansies, Pentstemons, Pyrethrum, Phloxes, Peonies, and hosts of other herbaceous plants looking full of promise. Nearly the whole of the ground lies on an easy slope, admirably adapted for the cultivation and effective display of such plants, as well as for the perfect culture of the thousands of Dahlias, Asters, Stocks, Marigolds, Zinnias, and Sweet Peas.

In the home nursery we observed tens of thousands of Dahlias and other plants being propagated and grown-on. The seed-shops, sheds, offices, packing places, stores of sorted written labels ready for issue, diate use, all told of the enormous business done in plants, cuttings, and seedlings. One of the fruit-houses entered was the central house for Dahlias, which had already yielded several crops of cuttings. This was 60 feet long and 18 feet wide, and affords many thousand cuttings at each beholding. The cuttings are rooted in houses such as that figured in *Gardeners' Chronicle*, May 11, 1895, p. 555. The plants that have supplied so many cuttings were so full of health as to suggest that the oftener they are beheld the stronger they grow.

The cuttings to the number of about seven in a 3-inch pot, if I remember rightly, root with such certainty in about a fortnight, that among the thousands present, there seemed no evidence of a single failure. They are rooted in hot-beds placed all round the sides of the house. So soon as rooted they are placed in the central bed of the house without bottom-heat. When sufficiently hardened off here, they are passed on into cold-pits, where I saw some 20,000 plants as green as Leeks, hardening off.

The Alpine-house was filled with Dahlias in 10-inch pots, growing on to bloom for the Temple Show in London. It was a novel feature.

Fuchsias and Pelargoniums, especially the scented species of the latter, are largely grown. Chrysanthemums are grown by thousands, some 20,000 early

ones for open borders being bedded out in cold-frames, and a choice collection of later blooming and Japanese varieties are grown in pots. Some 2 acres of cold-frames near to the chief office and packing-sheds contain enormous quantities of Pansies, Violas, Asters, and vegetable plants, such as Celery, Parsley, Leeks, and Onions. The practice of selling cuttings, and raising for sale improved vegetables of the finer strains in tens of thousands, only seems a thing of yesterday; but already there seems no possible limit to the area and importance of this new and unique trade. Few large plants were seen, but short, strong, stubby ones, that may be sent by parcel-post anywhere. Genial as is the climate at Rothesay, the firm grows many of their finest seeds at Orpington in Kent, where some thirty hands are employed, whilst at Rothesay there are sixty. D. T. F.

ALPINE GARDEN.

GENTIANA ACAULIS.

THIS is one of the richest blue-coloured flowers of all the plants which bloom in the rockery or in our borders in the spring, and it is one that everybody admires, and yet it is not grown to the extent which it deserves. The plant is apt to die off suddenly sometimes after attaining to a fair size, owing, perhaps, in some instances to the poverty of the soil, in others to extreme dryness, and occasionally to the action of frost, which lifts the plants when young out of the ground. Mr. Burroughs has a beautiful row of it at Ketton Cottage, alongside of a path about 40 yards in length. This was recently full of flowers, and I counted eighteen on a piece 9 inches square. The situation is exposed to the sun during the whole of the day, and the soil well drained. When the border was made, several years since, plenty of burnt-earth and manure were incorporated with the staple. I have seen the plant growing equally well in a damp and somewhat shady position, but never before saw the flowers so thickly placed. W. H. Divers, *Belvoir Castle Gardens, Grantham.*

LAW NOTES.

A TREE-FELLING CASE.

Ashley v. Ashley.—This is one of the most flagrant cases of tree-spoilation that ever came under my notice; as Mr. Judge Kekewich, before whom it was tried in No. 4 Chancery Court said, it was a clear case of "devastation." It occurred in the following manner:—Mrs. Ashley, who was the life-renter in the estate, bound herself over under a marriage settlement to hand the thing over to her husband if he survived her, and to any issue they might have, in fee or absolutely. Moreover, she bound herself not to touch any ornamental trees, but to hand them over to a male child she had, after her own and her husband's decease. The trustees of the marriage settlement, in the interests of the young heir, when they found that the lady life-renter was marking and "ringing" the best trees in the paddock round about Beaver Grove, which is a residential portion in the lower reaches of the estate, on the Denbighshire banks of the Conway, and is one of the most charming sites about Bettws-y-Coed, applied to the Court of Chancery for injunction, and obtained it, subject to proof.

The case came on for hearing before Mr. Justice Kekewich, in Chancery Court No. 4, and was continued for three days till disposed of. The solicitors for the plaintiff were Griffiths & Allan; and for the defendant, D. Jones and Roberts, both of Llanryst. The experts employed were Messrs. Jaa, Anderson, Manchester; Peter McIntyre (Earl of Ancaster's agent), Llanryst; and Charles Frewen, land agent, Victoria Street, London, for the plaintiff; and Walter B. Jones, Criccieth, N. Wales; Johnston, Bangor; and Wm. G. Jones, Llanfair, for the defender. Photographs were put in evidence showing about thirty of the principal trees, some of them showing the

"ringing" at the base, others showing the trees untouched; the bulk of them were over 100 years old, and showing remarkable vigour, good enough for quite another 100 years to come. The principal trees were Beech, Oak, Ash, and Sycamore, and the girth of most of them varied from 7 to 9 feet 6 inches at 3 feet from the ground; they were a remarkably healthy lot of trees, not stag-headed. The paddock is opposite the fine road on the Carnarvonshire side of the Conway, and the ground is simply beautiful, sloping up to an amphitheatre-like background. There is a house in the centre, not large, more like a highland shooting-box, but admirably adapted for a reclusé, or for a lady or gentleman spending the afternoon of life. The tree scenery is splendid, and it was the grossest piece of vandalism to mark the sixty odd trees, of great beauty, for cutting down. The place has not been laid out or kept on landscape lines, and hence the disposition to slaughter these aged trees—all beautiful in canopy, but not too close together; good enough, indeed, for ornamental work for many years to come. The battle, if it had been fought out, would have been an interesting one, as it would have turned on what was an "ornamental" tree, and the examination and cross-examination of the experts would have been keenly noted. The learned judge, who noted the photographs, and could tell not only which was Oak and which was Beech, but what was Irish Ivy and what Scotch Ivy running up the trunks, showed an expert at once that the case judicially was safe in his hands. On pressing the question how it was that the lady was cutting down the trees of such beauty and age, the counsel for the defendant, after consultation, replied that it was because she wished to plant young ones—a remark that caused some merriment. In the end his lordship pronounced against the life-renter with costs, the trees that were "ringed" to be cut down and realised, and perpetual injunction to be granted against the defender, with pains and penalties if there was any breach of his lordship's interlocutor. *J. Anderson.*

REPAIRING A TENNIS LAWN.

Crouch & Son v. Haig.—This action came on for hearing at the Guildford County Court recently before his Honour, Judge Lushington. The plaintiffs are florists of Guildford, and the defendant is a retired General, living at Pitorof, Epsom Road, Guildford. Mr. Furzeaux, of Messrs. Smallpiece & Co., was for the plaintiffs, and Mr. Gilbert White for the defendant. In answer to his Honour, Mr. White said the defence was that the work was not done according to the estimate. Mr. Furzeaux stated that early in September, 1895, Mrs. Haig asked plaintiff to attend at her residence, and to give an estimate for making up the tennis-lawn and putting it in repair. The plaintiff attended and sent in an estimate. His Honour read the estimate, in which the plaintiff undertook to prepare the lawn, and to look after the same to the middle of April, and get it in good order for £7 7s. Mr. Furzeaux said he should call plaintiff and four witnesses to prove that the work was properly done. On April 30, 1896, Mrs. Haig wrote stating that she took over her tennis-lawn from that date, and she regretted she ever put it in his (plaintiff's) hands, as it was full of holes, weeds, &c., the grass was dead, and though it was within a month of the tennis season, she had no tennis-lawn, and the opportunity of making one was lost. Another letter from Mrs. Haig, written after the account was sent in, was read, in which she stated that the plaintiff had not carried out his undertaking to make the tennis-court fit to play on by that season. She had no objection to pay a fair price for the labour he gave, and for the manure and seeds, but the claim for £7 7s. was beyond all reason. Mr. Crouch, in his evidence, said the land was in a very bad state, full of holes and weeds when he first saw it, and everything was done to put the ground in a proper state. He sent five men, who were engaged in work there at different times, and the lawn was as good as they could possibly get it. Cross-examined: Mrs. Haig complained several times while the work was in progress. Mr. Wells, foreman to plaintiff, said that all

was done which possibly could be done for the lawn, and short of re-turfing. Other workmen were called, and stated that the lawn was left in a good state. Mrs. Haig deposed as to the arrangements made with Mr. Crouch, and said that at the end of April the lawn was full of holes, and there was a quantity of Plantain in it. The defendant's daughter said that the lawn at the end of April was full of holes, and there were bare patches, and a great number of weeds. They had a few games during the season, but had to apologise freely every time they asked anyone to the house. General Haig said the lawn was quite unfinished as a tennis-lawn. James Tuppin, gardener, said there were bare patches, and the ground was full of holes. The ground was not rolled sufficiently. About the end of May the witness took seven or eight barrow-loads of earth with which to fill up the holes. This concluded the evidence. His Honour held that the plaintiffs did not get the lawn into good order, but treated it in a superficial and perfunctory manner. The reason why they did not get it into good order was that they did not put enough work into it. He found for the defendant, with costs. The defendant had paid half the amount into court, and this will go towards the costs.

Obituary.

ALFRED GEORGE.—In the churchyard of Bicton, Devonshire, on Saturday, May 15, was laid to rest a good type of the English gardener. The deceased was a Kentish man by birth, and was gardener for many years to the late Mr. George Wyatt, of Lake House, Cheltenham, afterwards going to Bicton as gardener to the late Lady Rolle; this was in 1872. During the ten years that he stayed at Bicton he made many improvements in the grounds and gardens, developing and establishing the distinctive features introduced by his predecessor, Mr. Barnes. Some years ago he was appointed one of the lecturers on horticulture under the Devon County Council, and in which capacity he did excellent work, more particularly among the Apple orchards. His happy, gossy way of imparting technical instruction in the art of pruning, grafting, and budding, to the young farmers, who attended his classes, has already begun to bear good results in many places. He occasionally gave an evening lecture to the Devon and Exeter Gardeners' Association, and his death is much deplored by its members. A. H.

MARKETS.

COVENT GARDEN, JUNE 3.

[We cannot accept any responsibility for the unjoined reports. They are furnished to us regularly every Thursday, by the kindness of several of the principal salesmen, who revise the list, and who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general averages for the week preceding the date of our report. The prices depend upon the quality of the samples, the supply in the market, and the demand; and they may fluctuate, not only from day to day, but often several times in one day. E.]

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

Aemones, 12 bun.	1 6-2 6	Orchids—	s. d. s. d.
Arums, p. 12 blooms	2 0-4 0	Cattleya, 12 blms.	6 0-12 0
Bouvardias, per bn.	0 4-0 8	Ottolenghus	
Carnations, per doz. blooms	1 0-3 0	crispum, 12 bn.	2 0-6 0
Eucharis, per dozen	3 0-4 0	Psenny (Eng.), 12 bn.	4 0-12 0
Iris, p. doz. bun.	4 0-12 0	Pansies, doz. bun.	1 6-2 0
— White (French),		Polygonum, scar-	
— per bunch	0 0-4 0	let, per 12 bun.	3 0-6 0
Lilium Harris, per doz. blooms	2 0-4 0	— per 12 sprays	4 0-6 0
Lily of the Valley, dozen sprays	1 0-2 0	Polyanthus, doz. bn.	1 0-2 0
Maidenhair Fern, per 12 bunches	4 0-8 0	Pyrethrum, 12 bn.	2 0-4 0
Marguerites, per 12 bunches	2 0-4 0	Ranunculus, 12 bn.	2 0-4 0
Mignonettes, per 4 0-6 0		Roses, Tea, per doz.	0 1-1 0
Myosotis, doz. bunches	1 0-3 0	— yellow (Mar-	
Narcissus, various, per doz. bunches	2 6-5 0	chal), per doz.	1 6-6 0
		— red, per doz.	2 0-4 0
		— pink, per doz.	3 0-6 0
		— Saffran, p. doz.	1 0-2 0
		Roses, 12 bunches	4 0-9 0
		Stapandis, doz.	
		— per 12 bunches	2 0-3 0
		Tuberoses, 12 blms.	1 0-1 6
		Wallflowers, doz. b.	2 0-3 0

ORCHID-BLUMS in variety.

PLANTS IN POT.—AVERAGE WHOLESALE PRICES.

Adiantum, per doz.	4 0-12 0	Fuchsia, per doz.	0 0-9 0
Aspidistra, per doz.	12 0-30 0	Impatiens, per doz.	4 0-8 0
Asplenium, each	5 0-10 0	Hydrangeas, per dozen	9 0-18 0
Calceolarias, dozen	4 0-9 0	Lobelia, per dozen	4 0-12 0
Dracenas, each	1 0-7 6	Marguerite, p. doz.	6 0-9 0
— various, per doz.	12 0-24 0	Mignonette, p. doz.	5 0-8 0
Erics, various, per doz.	9 0-18 0	Musk, per doz.	2 0-4 0
Evergreen Shrubs, in variety, doz. each	6 0-24 0	Palms, various, each	2 0-10 0
Ferns, small, doz.	1 0-2 0	— specimens, ea.	10 0-84 0
— various, doz.	5 0-12 0	Polargoniums, per doz.	9 0-12 0
Ferns, elastic, each	1 0-7 6	Rhodanthos, dozen	4 0-6 0
Foliage plants, per doz.	12 0-36 0	Spiras palmata, per dozen	12 0-18 0
— Mosses, per doz.	6 0-9 0	Violas, per doz.	6 0-9 0

BEDDING PLANTS AND ROOTS FOR THE GARDEN in variety coming very good.

FRUIT.—AVERAGE WHOLESALE PRICES.

Apples, New South Wales, selected samples	10 0-14 0	Melons, Channel Islands, each	1 0-1 6
— ordinary	7 0-8 0	Netartians, sold per doz.	15 0-18 0
— The main, per case, selected samples	8 0-9 0	— Medium, do.	10 0-12 0
— per case, ordinary samples	5 0-6 0	Peaches, selected, per doz.	12 0-17 0
Figs, per doz.	2 0-4 0	— Medium, p. doz.	2 0-3 0
Gooseberries, 4 bus.	6 0-9 0	— Seconds, p. doz.	2 0-3 0
— Currants, per lb.	2 0-3 0	Pine-apple, St. Michael, each	4 0-7 6
— per lb.	2 0-3 0	Strawberries—morning gathered, per lb.	3 0-4 6
— Channel Is., per lb.	1 2-3 6	— packed in boxes, per lb.	1 0-1 6
— Muscats, per lb.	4 0-5 0	— per lb.	1 0-1 6
— Belgium, per lb.	1 3-1 6	— 2nds, per lb.	1 6-2 0

VEGETABLES.—AVERAGE WHOLESALE PRICES.

Artichokes, Globe, per 30-3 6	Mushrooms (Indoor), per lb.	8 0-8 0	
Asparagus, Worester, per bundle	1 6-2 0	Pears, ordinary (Channel Islands), per lb.	0 6-1 0
Beans, French, per lb.	10 0-1 0	— Pelsiphones (Channel Islands), per lb.	0 9-1 0
Chardflowers, Kent, per doz.	1 0-2 0	Peas, New Kidney, Channel Islands, per lb.	—
— various, homes, per doz.	3 6-3 0	— Salsbury, do.	—
— ends, per bundle	1 6-2 0	Salsbury, do.	—
Horradish, English, per bundle	2 0-2 0	— doz. punnets	1 6-1 6
— Foreign, per bundle	1 6-1 6	— Tomatoes, selected smooth, per lb.	0 7-0 9
		— Channel Is., lb.	0 5-0 6

POTATOES.

We are now having fair supplies of new potatoes, which run as follow:—Jersey Flukes and Kidney's, 411 to 412; St. Malo and Cherbourg, 410 to 410 1/2; Dunbar Maincrop, 95s. to 100s.; others, 26s. to 70s. John Bath, Wellington Street, Covent Garden.

SEEDS.

LONDON: June 2.—Messrs. John Saaw & Sons, Seed Merchants, of Great Malze Pond, Borough, London, S.E., state that to-day's market, as might have been expected, was one of buyers and of interest. Quotations for Clover and grass-seeds are consequently unchanged. Tares, owing to the recent welcome rains, still find buyers. Rye is required for. Full prices are asked for Rape-seed. Some choice Californian white sowing Mustard-seed, just landed, is offering at attractive rates. For bird-seed the demand is meagre. Linseed is declining in value. Blue Fens and Haricot Beans, move off freely at full rates. Lima Butter-Beans are firm, supplies on the spot being exceedingly scarce.

FRUIT AND VEGETABLES.

GLASGOW: June 2.—The following are the averages of the prices current here during the past week:—Apples, 6d. per pound; Tomatoes, Guernsey, 8d. do.; do. Scotch, 1s. 6d. do.; Grapes, home, 2s. to 3s. do. Vegetables: Turnips, French, white, 1s. per bunch; do. white, 2s. 6d. to 3s. per dozen bunches; Swedes, 2s. to 2s. 6d. per cart; Turnips, French, new, 1s. to 1s. 3d. per bunch; Carrots, French, new, 1s. to 1s. 2d. per bunch; do. Dutch, 9s. to 9s. 6d. per dozen bunches; Cabbages, 8d. to 1s. 2d. per bunch; do. Dublin, 7d. to 8d. do.; Cauliflowers, Edinburgh, 1s. 6d. per bunch; do. London, 2s. 6d. to 3s. per bunch; Parsnips, 4s. 6d. to 5s. 6d. per cwt.; Herbs, assorted, 1d. to 2d. per bunch; Leeks, 8s. per doz. to 8s. 6d. per doz.; Parsley, 4s. to 5s. per stone; Potatoes, best, 6d. do.; do. Paris, 4d. per lb.; Carrots, 6s. to 8s. per cwt.; Broccoli, 2s. 9d. to 3s. per dozen; Peas, French, 4s. 6d. per bushel; Asparagus, French, 1s. to 1s. 3d. per bundle; do. English, 2s. to 2s. 6d. do.; Cucumbers, 4s. to 5s. per dozen; Lettuce, round, 1s. to 1s. 2d. per dozen; do. French, 1s. 3d. to 1s. 6d. per dozen; do. Cos, 8s. 6d. to 9s. do.; Radishes, 7d. to 8d. per dozen bunches; do. French, 6d. to 9d. per bunch; Horseradish, 2s. 3d. per bundle; Onions, French, 6d. to 8d. per peck; Mushrooms, 1s. to 1s. 3d. per lb.; Beet-root, 7d. to 8d. per dozen; Cress, 3d. per basket; Endive, 1s. to 2s. per dozen; Spinach, 2s. to 3s. per stone.

LIVERPOOL: June 2.—Average of the prices current at the undermentioned markets:—St. John's: Potatoes, 10d. to 1s. per peck; do. new, 11d. to 2d. lb.; Peas, 4d. do.; Asparagus, 2s. to 3s. per 100; Cucumbers, 3d. to 6d. each; Apples, 1s.

dozen; Gooseberries, 6d. lb.; Grapes, English, 1s. 6d. to 2s. Strawberries, 6d. to 2s. 6d. do.; Mushrooms, 1s. per lb. Bird's-neck—Potatoes, 8d. to 10d. per peck; do. new, 11d. to 3d. per lb.; Peas, 4d. to 6d. do.; Asparagus, 2s. to 3s. 6d. per 100; Cucumbers, 2d. to 5d. each; Apples, 1s. per dozen; Gooseberries, 4d. per lb.; Grapes, English, 2s. 6d. to 3s. 6d. do.; Cherries, 6d. to 1s. 6d. do.; Strawberries, 6d. to 10d. do.; Mushrooms, 1s. to 1s. 6d. do. North Hay: Potatoes, per cwt. Jersey, new, 11s. to 11s. 6d.; Imperators, 1s. 10d. to 2s. 2d.; Champions, 1s. 10d. to 2s. 2d.; Main Crop, 2s. 6d. to 2s. 10d.; Giamontis, 2s. to 2s. 3d.; Bruces, 3s. 4d. to 3s. 8d. per cwt.; Turnips, Swedes, 1s. 6d. to 1s. 8d. per cwt.; Carrots, 6s. to 7s. do.; Onions, foreign, 6s. to 7s. do.; Lettuce, 6d. to 1s. per dozen; Cucumbers, 2s. to 3s. do.; Cauliflowers, 1s. 3d. to 2s. do.; Cabbages, 8d. to 1s. 4d. do.

CORN.

AVERAGE PRICES of British Corn (per imperial qr.), for the week ending May 29, and for the corresponding period of 1896, together with the difference in the quotations. These figures are based on the Official Weekly Return:—

Description.	1896.		1897.		Difference.
	s. d.	s. d.	s. d.	s. d.	
Wheat	25	4	26	2	+ 2 0
Barley	21	5	21	3	- 0 2
Oats	14	10	17	10	+ 3 0

GARDENING APPOINTMENTS.

MR. W. MOUNT, until recently Foreman in the Gardens, "The Yewlands," East Grinstead, Sussex, is being succeeded by E. BEAZLEY, Esq., Hazelbank, Hollyport, near Maidenhead, Berks.

MR. R. DAVEY, for the past four years Gardener at Freshwater White House, as Gardener to Colonel Knox, Alice Holt Lodge, Farnham, Surrey.

MR. ROBERT ASHMORE, Gardener to Mrs. MEADE WALCO Marsh Green, Ashover, Derbyshire.

MR. JOHN WATSON, until lately Gardener at The Hall, Wirksworth, Derbyshire, as Head Gardener to Colonel J. H. BERTALL, Hesse Mount, near Hull.

MR. P. TAYLOR, late Foreman at Bettlesfield Park, Whit-church, Salop, as Head Gardener to F. C. FLETCHER, Esq., Lettiam Garage, Altrincham, N.B.

MR. A. BEST, for the past four and a half years as Wych Hill, St. Leonards-on-the-Wald, Glen., as Head Gardener to E. J. NEWTON, Esq., Hilditch, Walsley, Kidderminster.

MR. H. G. SYMES, late Head Gardener to R. B. EVERED, Esq., Ostlands, Horley, as Gardener to M. D. RUCKER, Esq., Sefton Lodge, Newmarket.



[The term "accumulated temperature" indicates the aggregate amount, as well as the direction, of degrees of temperature above or below 42° Fahr. for the period named; and this combined result is expressed in Day-degrees—a "Day-degree" signifying 1° continued for twenty-four hours, or any other number of degrees for an inversely proportional number of hours.]

Directions.	TEMPERATURE.		RAINFALL.		BRIGHT SUN.	
	Above 42° (or below 42°) Mean for the Week ending May 29, 1897.	Above 42° for the Week.	Day-deg.	10ths Deg. Inch.		
0 0	52	0	13	5 6	91 15 0	74 29
1 2	54	0	25	14 5	80 9 8	59 30
2 3	56	2	13	7 5	78 8 1	62 32
3 1	58	0	25	118 5	79 9 2	74 34
4 0	62	0	2	112 5	75 10 2	74 33
5 3	90	0	30	177 4	71 11 4	72 35
6 3	73	4	33	10 7	83 14 0	79 32
7 1	70	0	3	88 5	86 11 8	82 32
8 4	100	0	47	137 5	91 17 4	84 34
9 3	75	0	52	11 6	95 18 3	83 31
10 3	00	0	15	55 0	97 16 1	78 39
11 3	75	0	123	80 3	97 14 0	60 35

DISTRICTS.	TEMPERATURE.					RAINFALL.		BRIGHT SUN.	
	ACCUMULATED.					Total fall since Jan. 3, 1897.	Percentage of possible duration for the week.	Percentage of possible duration for the whole year of 1897.	
	Above 45° for the week ending May 29.	Above 45° for the week.	Below 45° for the week.	Below 45° for the week.	10ths inch.					feet.
0	1	43	0	17	1	96	16.4	31	30
1	3	41	4	39	4	85	10.2	27	30
2	3	42	0	4	76	2	83	8.7	35
3	1	69	0	21	121	2	83	9.5	32
4	1	67	0	10	114	0	109	10.7	39
5	1	74	0	34	178	1	76	11.8	40
6	1	55	0	40	19	3	87	15.9	42
7	3	57	0	7	90	1	89	12.1	51
8	2	48	0	40	138	4	96	19.3	45
9	1	61	0	56	10	2	99	14.6	45
10	2	63	0	6	56	3	92	17.4	34
* 1	1	79	0	122	80	3	102	15.6	43

The districts indicated by number in the first column are the following:—

- 0, Scotland, N. Principal Wheat-producing Districts.—1, Scotland, E.; 2, England, N.E.; 3, England, E.; 4, Midland Counties; 5, England, including London, S. Principal Grassing, &c. Districts.—6, Scotland, W.; 7, England, N.W.; 8, England, S.W.; 9, Ireland, N.; 10, Ireland, S. * Channel Islands.

THE PAST WEEK.

The following summary record of the weather throughout the British Islands for the week ending May 29, is furnished from the Meteorological Office:—

"The weather continued very fine and dry until Tuesday, when it became unsettled, with occasional rain in the north, and this condition extended rather quickly to all other parts of the Kingdom. Thunder and lightning occurred in many parts of England during the latter part of the week."

"The temperature was below the mean, the deficit ranging from 1° in most districts to 2° in Ireland, S. and England, S.W., and 3° in England, N.W., and N.E., and Scotland, E. The highest of the maxima were recorded, as a rule, on the 25th, when they ranged from 73° in England, S.W., and 72° in England, S., to 64° in Scotland, N. and England, N.E., and 63° in the Channel Islands. The absolute minima were recorded on rather irregular dates, and were again very low, ranging from 27° in Scotland, E., 30° in Scotland, W., and 32° in England, N.E. and S.W., to 40° in England, E., and to 46° in the Channel Islands."

"The rainfall was more than the mean over all the western half of the Kingdom, as well as in Scotland, E. and England, N.E., and just equal to it in the Midland Counties; in Scotland, N.W. and S.W., and Scotland, E., the fall was rather less than the normal."

"The bright sunshine exceeded the mean in Ireland and in Scotland, W., but was either below or first equal to the normal over Great Britain. The percentage of the possible duration ranged from 51 in England, N.W., and 47 in Ireland, S., to 31 in Scotland, N., and to 27 in Scotland, E."

CULTURAL MEMORANDA.

VARIEGATED POLEMONIUM HUMILE.

It is a great pity that so pretty a little perennial is not more often met with. It is a most effective bedding plant, either as an edging or as groundwork to such subjects as Fuchsias, Cannas, or the small-flowered Begonias. One of the most charming examples of summer bedding I have ever seen was a medium-sized bed covered with this variegated Polemonium, and dotted about with Begonia wiltonensis. A variety of combinations will readily suggest themselves. It is very striking when used as a groundwork for a bed planted with red and white Fuchsias, or a mixture of scarlet and yellow Cannas. In a damp shady spot where flowering plants get too leggy, this Polemonium, used with Greivillea robusta, provides a simple and attractive change.

SIBTHORPIA EUROPEA AND VARI.

For growing in pans or small baskets, few plants are more graceful and attractive than these creepers. By some they are considered to be difficult to keep during the winter; but a little more heat and less

water than is usually given them will surmount the difficulty. At Chiswick they winter *Sibthorpia europæa* var. *variegata* in the propagating-house, and the treatment answers admirably. If grown in pans they should be well drained; and in the case of baskets, the use of too thick a lining of moss should be guarded against, as the *Sibthorpias* dislike a damp bottom. The soil most suited for their requirements is one through which water percolates freely—leaf-mould and loam in equal quantities, with a liberal sprinkling of sharp sand and broken charcoal, will answer.

Although the white and yellow forms (*S. europæa* var. *variegata* and *S. e. var. aurea*) are chiefly grown, the type (*S. europæa* with green leaves) is very graceful, and makes a good companion to the others. The flat appearance of the baskets or pans may be well relieved by placing a few pieces of soft brick or stones on the soil, thus giving a pleasing appearance. *Sibthorpias* may also be profitably grown in small pots for an edging to the conservatory stage. *A. C. Earleth.*

PACKING SEEDS AND TUBERS FOR LONG JOURNEYS.

"The *Chien*, as quoted in the *Revue Scientifique*, mentions a method of forwarding and packing seeds and tubers which seems ingenious and practical, especially when the journey will be long, and warmth and dryness are likely to have injurious effects. The method employed by a Lot florist consists in moistening a little plaster, and imbedding the seeds, tubers, or rhizomes which are to be transported in this. This plan has succeeded well for packing rhizomes sent from Japan, roots of aquatic plants, the lengthened transit of which is always a difficulty. Enveloped in plaster, the plants, or pieces of plants, are in no danger; they cannot become parched, and are kept in a satisfactory condition of partial moisture. It would seem that this plan would also succeed under other conditions. In Australia it is employed for the transport of fresh butter. The butter is made up into blocks with parallel and rectangular surfaces, to which are pressed glass slabs of the same sizes as the sides and ends of the blocks of butter. The edges are covered with gummed paper for greater security, and the whole is then covered with plaster to a thickness of 6 millimetres. Plaster being a poor conductor of heat, such the butter against the variations of the temperature, and enables it to be kept longer than is possible under other methods of packing."



ANTS. *E. J. S.* The other means having failed to rid the houses of the ants, you should try the Balkinrain Ant Destroyer. See advertisement column of *Gardeners' Chronicle*, May 22.

BOOKS. *G. Robertson.* One of the best of which we know, which embraces the period 1843-92, is Mr. William Paul's *Contributions to Horticultural Literature*, published by the author at Waltham Cross, Herts.

BOUVARDIAS. *J. M.* The young *Bouvardias* have got into a bad condition of growth. Being potted too deep may have something to do with it, but probably the poorness of the soil or the want of sufficient pot-room would be a more likely reason. The young plants should be potted into small pots, and pinched back and kept stopped until the end of the summer if wanted for winter-blooming. The plants may either be potted on as they require it, or planted out into a border in the open ground, where they should be carefully tended, lifted, and potted, and placed for a time in a cold, shady frame at the end of the summer.

CAPE TOWN NURSERMEN. *C. Schmutz.* We are unable to give you the names of any others in Cape Town.

CARNATIONS DECAYING. *A. Davis.* The probable cause is an attack of cell-worms, and plant them the plants root and top forthwith, and plant the new bed of Carnations on clean soil, not incorporating any pasture manure, such as may have been used in the other bed. Trench the old bed after dressing it with rape dust, or meal or gaslime.

FIGS SHRIVELLING. *J. G. S.* It is common for some fruits to shrivel and fall in the manner yours have done; but such cases are most frequent upon trees that have been forced. The only explanation we can offer is that from some cause or other the trees have received a check. Get your shoots thoroughly ripened during the present autumn, as being the best means of preventing a recurrence of the circumstance next spring.

GREEN TREES TO MARÉCHAL NIEL ROSES. *J. S. W.* This is in reality an excess of growth, due to some climatal change, or to low temperature, combined with an excessive degree of moisture at the root. The Tea Rose is in all its varieties delights in a dry, warm, well-drained soil.

INSECTS. *G. J.* They are millipedes, and feed chiefly upon decaying matter. The Potato trouble must be attributed to other causes.—*W. E. Newman* tort worms, *Gordius varius*.

MARIE LOUISE VIOLET PARTLY FAILING TO BRING PERFECT FLOWERS. *Anxious Violet.* Probably the blooms are cleistogamous. Kindly send some for examination.

NAMES OF FRUITS. *Floewerk.* Strawberry, Myatt's Eliza.—*J. Batwell.* *Sudbury Hall.* Apple, Dumelow's Seedling.

NAMES OF PLANTS. *Correspondents not answered in this issue are requested to go on to consult the following number.*—*W. S. L. P.* 1, *Papaver rapifragum* × *orientale*; 2, *Crepis rubra*; 3, *Heuchera micrantha*; 4, *Lathyrus Sibthorpi* var.; 5, *Smilacina stellata*; 6, *Sedum praltum*.—*Zabel.* 1, *Aloe plicatilis*; 2, *Acerium multiflorum*; 3, *Dendrobium Bensouici*; 4, *Manettia bicolor*; 5, *Velevia officinalis*.—*H. L. W.* *Trassia verucosa*.—*R. C.* *Odontoglossum hovei* (Reichenheim), *Bot. Mag.*, 6265.—*W. C.* *Pyrus torminalis*—*W. T. J.* 1, *Asplenium marianum*; 2, *Hicium religiosum*; 3, *Scilla peruviana*; 4, *Urnula abasi*; 5, *Thalia occidentalis* var. *Elwanga*.—*H. P.* 1, *Cratogeomys pyracantha* var. *Lelandi*; 2, *Davalia canariensis*; 3, a variety of the common *Plant.*—*C. G.* *Bromus mollis*.—*J. Barré.* *Martialis* insufficient.—*R. N. H.* *Cypripedium Hoekeri*, *Suisse*. *Dendrobium crataecum*, so far as we can judge by the withered flower sent.

PEACH LEAVES BLISTERED. *S. J. W. H. R.* and *C. G.* The blistering is caused by a fungus, *Xoosoma deformans*, and you can do nothing now beyond cutting off the worst affected and burning them, and dressing the remaining foliage with dry flowers-of-sulphur, or the same in solution with water. The trees will not grow the injury to a certain extent, but it will be prudent to afford manure-water later. We believe it may be checked by spraying with Bordeaux Mixture, or sulphate of potassium, early in the year, when the leaves first expand.

VACUUMS. *Anxious.* The paleness of the leaf is probably due to the composition of the soil, and the fruit is affected with mildew. For the latter there is no known cure, but the fungus can be prevented from spreading by the use of sulphur.

RATING OF TRADE GREENHOUSES. *Enquirer.* They should be rated to the poor at one-fourth of the rate levied on other kinds of property.

SEEDS. *A. K.* The growers of seeds are usually much engaged in stocking, to whom the wholesale seed merchants and the nurserymen in a large way of business send stocks of seeds to be grown, and the seeds after the reaping of the plants whilst in growth, harvested and cleaned. We should think that you would do best by getting into communication with the wholesale merchants in the first instance.

VINE LEAVES. *E. B.* The warty appearance observed on the under-side of some of the leaves sent, betokens an excess of humidity in theinery, or what is almost the same thing—a lack of ventilation; and the browning of the foliage comes from redding, due also to lack of ventilation. This kind of scalding is not uncommon about the middle of vineries of great width.

COMMUNICATIONS RECEIVED.—*J. C.* Dr. Franceschi.—*S. Barbra*.—*O. T.*—*C. de B.*—*H. C.*—*L. P.*—*J. B.*—*W. W.*—*D. McD.*—*C. J. W.*—*A. L. Manilla*.—*W. E. S.*—*G. W.*—*R. N. Hooper*.—*G. Jones*.—*E. H. B.*—*R. D.*—*T. Harris*.—*H. M.*—*D. V. F.*—*J. Baxter*.—*J. J. W.*—*A. M. O.*—*A. D.*—*H. T. M.*—*C. de Bosschere*.—*U. D.*—*J. MacD.*

SPECIMENS PHOTOGRAPHS, &c., RECEIVED WITH THANKS.—*R. Wallace* & Co.



THE

Gardeners' Chronicle.

SATURDAY, JUNE 12, 1897.

PLANTS OF THE VICTORIAN ERA. ROSES.

As everybody seems now to be engaged in recounting the glories and progress of the past sixty years, I do not think it will be out of place if we dwell for a little while on what has been done in the Rose-world during that time. We may not have to tell of such great things as have been accomplished in other ways, though we cannot but rejoice in the altered state of most things around us. We think with pleasure of the improved condition of our labouring poor, and of the greater comforts which they now enjoy; we think, too, how many horrible practices have been done away with; how the prize-fights, of which Dr. Conan Doyle has given us such a vivid description in *Rodney Stone*, have ceased; how poor little boys are no longer sent up chimneys, nor girls of tender age sent down to work in mines, and we see in most places proofs of the increased prosperity of our country—but, sitting in my country vicarage, and looking round, and seeing the changes for the worse which have come upon all having to do with the land, landlords, parsons, and farmers, I feel that there must be some foil to the very bright picture people are continually drawing.

But passing from this digression, I think few Rose-growers have realised what they have gained during that period. Can we bring to our minds the time when hybrid perpetuals had not yet risen to the dignity of a class, when Tea Roses were almost unknown, and we were dependent on what are called summer Roses for the adornment of our gardens; when the dwarf Polyantha Roses had not been introduced, when in effect we had no Marie Baumanns or Charles Lefebvre, no Duke of Edinburgh or Mrs. John Laing, no Catherine Mermet or Comtesse de Nadaillac, no Maréchal Niel or William Allen Richardson, and no "Her Majesty." Such a state of things is hardly conceivable now, and yet such was the case at the beginning of Her Majesty's reign.

During the period of the last sixty years, it is very difficult to say how many Roses have been sent out into the world, but if we take the average as forty each year, there cannot have been fewer than between 2000 and 3000 Roses sent forth from raisers abroad and at home; and the question will naturally occur, what has become of them? Of course, the greater portion of them have passed into oblivion; hundreds were sent out which ought never to have been put in our catalogues, while others which were good in their time, have been superseded by better flowers in the same colours—and it is

hardly fair to judge the Rose-growers of fifty years ago by the standard of to-day, for no doubt many of them did think when they sent out their flowers that they had reached the acme of perfection. I gather this not only from my knowledge of Roses, but also of other flowers. When a man names a flower which he has raised after his wife or some particular friend, it is evident that he means to put an especial honour upon it, and thinks it well worthy of it; thus, in the *Gladiolus*, when I recollect that dear old Souchet called one after Madame Souchet, I have no doubt he thought he had raised a flower of great excellence, yet if we could put it alongside of some of his own raising of recent years, he would be surprised to think he could ever have so called it.

Then, again, the price which is put upon plants is another pretty sure index of the raiser's estimation of their value. I can well remember when 5 guineas were cheerfully paid for Garth's Joan of Arc Pelargonium, and the public expressed their high opinion of it; yet ten years afterwards there was probably no collection in which it was found, and people wondered how they could have been so foolish as to give such a price for so starchy and loose a flower. I write all this because I do not think it is quite fair to denounce the raisers and senders out of those older varieties as if they designedly took-in the public.

HYBRID PERPETUALS.

The three classes of Roses whose improvement have been so remarkable during the past sixty years are hybrid Perpetuals, Tea-scented, and Noisettes. The origin of the former is a matter of considerable doubt; but I believe that the Hybrid China, crossed with Damask, Hybrid Bourbon, and other Roses, have produced some of the magnificent flowers which we now possess. Two of the most celebrated raisers in the older days were Laftay and Vibert; but I do not think any of their productions have survived to the present day, except in a few garden Roses such as *Gloire des Rosomanes* and *Aimée Vibert*. The origin of the Teas and Noisettes is somewhat better known; they are the product of the China Rose crossed with the yellow China or Tea Rose; and I believe that all the fine varieties that we possess are traceable to this combination. The Noisette Rose was raised in America by M. Philippe Noisette: it was produced from Old Musk fertilised with the common China Rose, and from the very first has been a great favourite with the French Rose growers; but its earlier admirers could never have anticipated the glorious results which have followed during recent years.

The onward progress of hybrid perpetuals has been very remarkable, although at the same time, notwithstanding all the efforts of acute and persevering hybridisers, there are some that seem to hold their own amid the more recent productions. Take, for example, General Jacquemint, whose introduction I well remember in 1853; there are times when it still maintains its position against all competitors. But probably few persons have realised the fact that there are no Roses in this class which go back to the period of Her Majesty's accession, and that by far the greater number of the exhibition Roses date back to the '60's and '70's, so that when we take the lists of Roses recommended by the National Rose Society, or by such authors as Mr. Foster Melliar, or the Dean of Rochester, or those of any of our great nurserymen, you may be sure that all of them are of the Victorian

Era. There are some of the Roses in the earlier portion of that period which were very beautiful, but for one reason or another, they have had to give place to others; thus, that exquisitely-formed Rose Comtesse Cécile de Chabrillant, which after its introduction in 1858 used to be so exquisitely shown by the late Mr. Hedge of Colchester, was to be seen in every exhibitor's box, has been deemed too small for the present generation, which in true barbarian fashion worships size; while such brilliant flowers as Eugene Appert, which I recollect the late Mr. Standish showing in good style, and which for brilliance of colour and beauty of foliage has never been surpassed, has been forced to succumb, owing to its imperfect form. And so, again, *Géant des Batailles*, which the late Mr. Rivers looked upon with such favour, and which became very popular after its introduction by him towards the end of the forties, is now rarely to be met with, one reason being its great tendency to mildew. But after all these eliminations, what a galaxy of glorious flowers remains, all the productions of this reign; and the scarcity of the additions during the last few years, shows, I think, that there is not much more to be done in the improvement of this class—and this is certainly true, at any rate, with regard to foreign raisers, who have added nothing valuable to it in the past few years. A trenchant remark of the *doyen* of Rose exhibitors—Mr. B. R. Cant—confirms this statement. Knowing that he had kept a memorandum-book of all the foreign Roses that he had bought in each year, I asked him to let me have a look at it, which he has most obligingly done. It is now before me, and it is very curious to see how many there are which he propagated which never made any mark; while others which were much sought after once have dropped out of cultivation altogether. He received the Roses direct from the raisers, and hence it is worthy of note, that whatever may be said to the contrary, Guillot, the raiser of La France, put her down amongst the Hybrid Perpetuals. Mr. Cant says, "I became so disgusted with the lot of worthless Roses that were sent out, that I gave up buying in any quantities as years went on." How prolific the '60's were in good Roses may be seen by the following, which are noted in Mr. Cant's list, and which still maintain their position as exhibition Roses:—Alfred Colomb, Annie Wood, Baroness Rothschild, Camille Bernardin, Charles Lefebvre, Comte Raimbault, Comtesse d'Oxford, Devionne Lamy, Dr. Andry, Duchesse de Morny, Duc de Wellington, Dupuy Jamain, Eugénie Verdier, Fisher Holmes, Horace Vernot, Louis Van Houtte, Madame Victor Verdier, Marguerite de St. Anand, Marie Baumann, Marie Rady, Marquise de Castellane, Maurice Bernardin, Mons. Nouan, Pierre Notting, Prince Camille de Rohan, and Xavier Olibo.

The '70's produced much fewer, the most noticeable among them being A. K. Williams and Madame Gabrielle Luizet; while during this time we received several Roses with high-sounding descriptions which turned out only to be reproductions of Roses already under cultivation, and which had to be classed in our catalogue as Roses synonymous with much older varieties.

Hitherto, I have dealt only with the foreign Roses. There were during this period a few English-raised ones of note, although it was somewhat difficult to determine their exact position, as it was a custom with some people to purchase the stock of some French Rose, to

give it an English name, and bring it out as if it were an English Rose; however, a new era dawned, and the late Mr. Henry Bennet, of Stapleford, near Salisbury, commenced his work of hybridising, and began to send out what he called "pedigree Roses." This term, as I contended at the time, is an incorrect one, as it is generally used to signify those things of which the preceding generations may be traced. Thus, for instance, we speak of the pedigree of a race-horse or of a short-horn, because, if we enquired of the origin of either we should be shown books in which their forefathers could be traced back for several generations; whereas, as in the case of Mr. Bennet's Roses, nothing more was implied than that the father and mother of the variety were known. I remember well going to see him at Stapleford, where I saw his earlier productions and experiments. I felt convinced that he was upon a right track, but thought but poorly of the first half-dozen that he sent out; he was too hasty in so doing, naturally enough, perhaps—but not one of them, I believe, remains in culture at the present time. His practice seems to have been mainly to cross hybrid perpetuals and Teas; and certainly the results were very remarkable. He afterwards removed to Shepperton, and unquestionably left a name behind him as a most successful raiser of new Roses. In Mrs. John Laing we have, I think, the best Rose of its colour in cultivation; this is shown by its heading the list in the selection of Roses, and by its being included in almost every stand of superior merit. Again, "Her Majesty" (fig. 143) is, no doubt, a grand Rose of its colour, though, unfortunately, dreadfully subject to mildew. In Lady Mary Fitzwilliam and Viscountess of Folkestone, we have flowers which very plainly show the admixture of Tea-blood in them; the former a very poor grower, and the latter a Rose which is a great favourite with some, though I confess I do not care a great deal for it.

Unfortunately for the Rose-world Mr. Bennet died before he could carry out all his plans; at his death his stock was dispersed, and many of his plants came into the hands of other growers, by whom they were sent into commerce—we may instance among them Captain Haywood and Clara Watson, and perhaps there may be others yet to come. Before Mr. Bennet had passed away another firm had entered upon the same course, namely, Messrs. Alex. Dickson & Sons, of Newtownards, co. Down, Ireland; they have each year sent out varieties of their own raising, and have been successful in obtaining several Gold Medals of the National Rose Society for new seedling Roses. Commencing with Earl of Dufferin, in 1887, they have sent out twenty-seven Roses, some of them of undoubted merit, while others, I am afraid, will have but a temporary popularity; they are mostly light-coloured Roses, and I think probably amongst them the best are Mrs. Sharman Crawford, Helen Keller, and Mrs. W. J. Grant. The last-named was purchased by an American firm, and was brought out as Belle Sibrecht; it is called a hybrid Tea, but I cannot say that I see much of that cross in it.

TEA ROSES.

In Tea Roses we have, on the other hand, received nearly all our most valued varieties from France. It is a curious fact that Devonians, which was for a long time the only English raised Tea of any value, dates back from a period almost coincident with the commencement of Her Majesty's reign, for it came out in 1838. Indeed, until Miss Ethel Brownlow was

sent out by Messrs. Alex. Dickson & Sons, it stood alone, and very few additions have been made on this side of the Channel. All the grand Teas from Niphetos sent out in 1843, down to Maman Cochet in 1893, have come to us from abroad; we have received some from America, but they have been mainly sports, and it seems now almost as if, in this class as well as in H. P.'s, France has done all she can for us.

GARDEN ROSES.

In garden Roses also there have been charming additions in the class of Noisettes;

summer Roses, hybrid Chinas, hybrid Bourbons, Gallicas, &c., and lamentations are continually poured out about their absence from our gardens, and laudations of the grand bushes of former days are continually made; but I cannot but think that if some of our more brilliant-coloured H. P.'s were treated somewhat in the way these Roses used to be, we should have as grand a display as the most brilliant colour among them ever gave. Thus, if for instance a plant of General Jacqueminot budded on a standard were allowed to have free course, we should have a grand bloom in June



FIG. 139.—CATTLEYA "QUEEN-EMPRESS." (SEE P. 384.)
(Colour of the sepals and petals clear rose, lip white with a crimson centre, side lobes yellow.)

what garden is complete without William Allen Richardson or L'Idéal? I say nothing of Mauchal Niel, as it is more suited for the greenhouse.

Other classes of Roses have, during the latter portion of this period, come into much notice: one is the class of hybrid Teas, and to which some good additions have latterly been made, although I quite think, with the late Mr. Rivers, that the fewer the divisions, and the more simple the classification, the better; still they serve the purpose of keeping the more decided Tea and Noisette Roses in a class by themselves. It is somewhat remarkable that no attempt has been made in what are called

or July with a prospect of autumnal flowers also. In that case the blooms would have to be left on in clusters, for no one used even to think of disbudding summer-flowering Roses, and, doubtless, the desire to have large and well-formed flowers has prevented this plan from being adopted.

The bold attempt so successfully carried out by Lord Penzance of hybridising the Sweet Briar has given another charming class to our Rose gardens. He has in the pages of the *Rosarian's Year Book* showed with what care he has carried out his plan; while the beautiful varieties which, with the exception of the first two raised (Lord and Lady

Penzance), bear the names of Sir Walter Scott's heroines, have been distributed by Messrs. Keynes, Williams & Co., and are now to be found everywhere—their tints are very varied, and they are not quite single, and are, therefore, not quite so evanescent. For covering a fence they are admirably suited, while the delicious fragrance of the type is found in the foliage of all of them.

POLYANTHA ROSES.

There is yet another class which has received some remarkable additions during the past few years, that ordinarily called Polyantha; the Japanese Rose multiflora or simplex has been crossed with some of our Teas, and has produced a delightful class of dwarf double Polyanthas,

Madame Georges Bruant, may be the *avant courier* of many others.

I have not noticed, as I might have done, the many good Roses which we owe to sports, such as Prince Arthur, a dark and highly-coloured sport of General Jacqueminot, brought out by Mr. B. R. Cant; Sir Rowland Hill, dark claret sport from Charles Lefebvre, brought out by Messrs. Mack & Son, which obtained a Gold Medal of the National Rose Society; Souvenir de S. A. Prince, a sport from Souvenir d'un Ami, sent out by the late George Prince, of Oxford—but, in truth, I have trespassed too much on your space already, and must close this imperfect but honest attempt to give some idea of how much English gardens owe to the Roses of the Victorian Era. *Wild Rose.*

and to varieties was very much what had been known from the date of the European peace onwards; and, indeed, the advance was slow until we had passed into the fifties, when there seemed to be seen the commencement of a new era. During the long period which had preceded 1851, the year of the famous first great International Exhibition, the great mass of the British people had not been fruit-consumers on a large scale. Practically, beyond getting such small supplies as were furnished, the general culture of fruit of the higher order was found only in the gardens of the wealthy, and those large manufactories of fruit, as they really are, now to be seen in all directions, had not then been dreamt of; they are the product of the gradually growing requirements of a richer public, as well as of the removal of the duty on glass, an impost that pressed on horticulture in this way with exceeding harshness. When that tax was removed there came also more correct ideas as to heating glasshouses, the old brick fires being superseded by hot-water pipes and boilers, and these two things conjoined soon made possible what was before impracticable. From that time fruit culture for the people became an important industry, while now, it is a very remarkable one. Products and prices have been revolutionised, and to-day anyone with moderate means may purchase superior glass-produced fruit with comparative ease. Still farther, we owe something to the skill and enterprise of that much-deprecated being, the foreigner, who in realising that a great and wealthy people such as inhabited the British Isles must present a great market for fruit, and finding our ports, thanks to Free Trade, open to him, soon sent into our markets in a wonderful way the choicest fruit products of favoured regions. How many of us have grumbled at and deprecated these imports, yet how many have forgotten the undoubted fact that whether indoors or out, few things have done more to stimulate home culture and induce splendid efforts to counteract these things than have the imports themselves. But for them we might have been as much asleep respecting fruit-production as in the earlier days of the Queen's reign. But the supplies of fruit sent into our markets, no matter from what source, have but helped to excite the public palate, and the demand for more increases from year to year. Whilst we may rightly and admirably do our very utmost to grow our own fruit to satisfy our own needs, at least we may not forget what we owe to the foreigner for his example in culture, in method, and in marketing, and how beneficial these things have been to us as a nation! We have but to go on producing the best—for it is only the best that is found profitable, and in no matter how great abundance, a market for it will be furnished, so long as the people have ample means; whilst the more fruit that is consumed—and this fact at once ennobles fruit-culture—the healthier and the happier the community will be.



FIG. 140.—*ODONTOGLOSSUM CRISPUM* "QUEEN VICTORIA." (SEE P. 384.)

Colour of the sepals white, suffused with pink; petals whiter; blotches chocolate-brown; lip white, fringed with yellow, and blotched with brown.

and such flowers as Cecile Brunner, Ma Paquerette, Gloire de Polyanthas, Perle d'Or, and others, form a class which we cannot now afford to neglect, blooming, as they do, in large clusters, and of a bright and pleasing colour. To these must be added that remarkable Rose, Crimson Rambler, introduced by Mr. Charles Turner, of Slough, and probably the most successful Rose of recent years. It is suitable for pots and pillars, but not for walls, for it suffers much from thrips.

To the Japanese we also owe the Roses of the ferocious and rugged character, which, whether in flower or fruit are valuable, and which may probably yet give us, under the hands of the hybridiser, a new class; the attempt has already been made, and the double-flowering one,

FRUITS OF THE VICTORIAN ERA.

IT is impossible to do anything like justice to this subject in the short space of an ordinary paper. If we had a horticultural historian who would undertake to chronicle the progress of gardening in all its branches during the nineteenth century, then would fruits and their progression form a very important feature of the work. In any such history, no period would stand out with greater clearness than would the second half of the century, including, as it does, especially in relation to horticulture, the most brilliant portion of the reign of Queen Victoria.

The year 1837 found fruit culture in an advanced yet hardly in a progressive state. What was known then in relation to culture

APPLES AND PEARS.

A brief sketch of the varieties of fruits in commerce in 1837 shows that we have, during the sixty years that have since then elapsed, added to them enormously. There were in those days of garden Apples about 130, and of these now about thirty are held in esteem, the rest having mostly disappeared. On the other hand, Apple varieties now are legion, and the best greatly excel in average excellence, the best of the earlier period. The following com-

prised the pick of the dessert section then, and are still well known:—Red Astrachan, Red Quarrenden, Margil, Adams', and Scarlet Pearmain; Kerry, Fearnis', King, Ribston, Blenheim, and Cockle Pippins; Downton and Yellow Ingestrie. Of cooking sorts:—Flower of Kent, Emperor Alexander, Hoary Morning, Yorkshire and Northern Greenings, Norfolk Beefing, Hambleton Deux Ans; Manx, Keswick and Carlisle Codlins, Royal Russet, Dutch Codlin, Old Hawthornden, Lord Nelson, and Mischall, or French Crab. Of the latter, how few appear now in the best collections, or are grown for market! Of the former, several of the Pippins still occupy a high place for flavour, being in that respect almost only excelled by Cox's Orange Pippin, the dessert Apple *par excellence*; but many fine additions to the section have been made during the past twenty years, as our fruit exhibitions disclose.

As with Apples, so with Pears. Although the exceeding value of Paradise and Quince stocks, for these fruits was well understood prior to the thirties, it was a long time ere they came into common use as now, and without doubt, their wider employment has done wonders in helping to popularise hardy fruit culture at home. Pears in the thirties were limited to about fifty varieties, the best of which to-day are Williams' Bon Chrétien, Marie Louise, Chaumontelle, Jargonelle, Beurré Diel, Passe Colmar, Glou Morceau, Duchesse d'Angoulême, Citron de Carmes, and Gansel's Bergamot, with Catillac and Uvedale's St. Germain, baking Pears. But very few of the eating varieties mentioned in this brief list rank high to-day, but the additions made during sixty years have been considerable. A select list of Pears would now comprise very superior excellence both in size and quality. Beyond the introduction of the single cordon in cultural methods, general training remains very much what it was.

PLUMS.

In the early period under notice there were about twenty-eight good class Plums in cultivation, and two or three Damsons. Of the former, Green Gage, Orleans, the Magnum Bonums, and Coe's Golden Drop existed, and they are well known still. But whilst the present Plum list is not an extensive one, it is mainly because so many of the old ones have gone out of existence, newer ones having entirely displaced them. What splendid fruits the Rivers' firm have given to the world, and the famous Victoria itself was not when the Queen came to the throne; we had the common and Jaune Damsoun in 1837, but a few other good ones have been added.

CHERRIES.

With respect to Cherries, May Duke, Elton, Black Eagle, and Bigarreau still remain amongst our best orchard varieties, and bid fair to be so for many years. We have, however, added to these largely from various sources, especially from the Continent; and the best of to-day, such as are grown in orchard-houses and on walls, are indeed grand fruits. We had the Morello and the Kentish, too, in the '30's, to furnish preserving fruits, and they are not excelled for that purpose to-day.

GOOSEBERRIES AND CURRANTS.

The Gooseberry in the early years was represented by from sixty to seventy varieties; and judging by those that have lived till to-day, the spiny bush was well to the front in the excellence of its fruit. Crowa Bob, Whitesmith, Rideman, Keen's Seedling, Roaring Lion, and

Rumbullion are still well known of larger fruits; whilst of smaller or dessert varieties, Champagne, Ironmonger, Early Rough Red, and Pitmaston Green Gage have hardly been excelled for flavour. No doubt the two most popular market Gooseberries are Lancashire Lad and Whinham's Industry; and Keepsake, Crown Bob, Red Warrington, and Whitesmith run them hard in popular esteem.

Currants had not in '37 attained any high position as garden fruits; but since that day we have given them better culture, and materially improved varieties. Those were in the days mentioned apparently limited to the Red and White Dutch and the Black Naples. These are still grown, but we have finer varieties now.

is without one or more of them; indeed, they have become indispensable.

With Nectarines, although there were about fourteen in cultivation at the early date, still is our list of esteemed good varieties not a long one. Elruge and Violette Hative were the best of that day. We have added to these a few such very superior varieties that the best are now universally grown. Her Majesty, Early Rivers, and Lord Napier alone suffice to illustrate the progress made in Nectarines.

Among the numerous acquisitions to hardy fruits raised at Sawbridgeworth by the late Thomas Rivers and his son, Mr. T. F. Rivers, few have taken a higher place than Nectarines, some of which are much earlier or later



FIG. 141.—NARCISSUS "VICTORIA": SEGMENTS WHITE, CUP PALE YELLOW.
(Specimen from Barr & Son. See p. 284.)

PEACHES AND NECTARINES.

The Peach had at least thirty-two representatives, the best of which, judging by their general culture to-day, were Royal George, Noblesse, Barrington, and Late Admirable. Some introductions from America, prolific and precious, have materially helped to make the season of the Peach far earlier than it previously was, but Late Admirable still remains one of the best late varieties. Many newer and undoubtedly superior mid-season sorts have been introduced during the period of the Queen's reign. Whilst outdoors culture remains pretty much the same, under glass Peach and Nectarine culture has marvellously extended, although the same principles of training and of culture prevail. In 1837 Peach-houses were rare in most gardens. To-day no good garden

in ripening, and have larger fruits of better appearance than any that were previously cultivated. Of these, we have only to mention Lord Napier, Newton, Advance, Albert Victor, Byron, Darwis, Improved Downton, Pineapple, Spenser, and Victoria, the subject of our illustration this week (fig. 144). This fruit is of a very large size, greenish-yellow, crimson on the sunny-side, rich and sugary, partaking of the flavour of the Stanwick. It is one of the finest varieties, but should not be planted outside in any but the warmer parts of the country. Under glass the fruit ripens with gentle forcing. Out-of-doors the fruit is ripe at the end of September.

Of all stone fruits the Apricot has made least progress. That is very remarkable. We had in 1837 Moor Park, Henskirck, Breda, and



FIG. 142. — GLORIOSA "HER MAJESTY," SNOW WHITE. (SEE P. 381.)
(Raised by Messrs. Sutton & Sons, Reading.)

Orange; and we have nothing better now. Its character as a "miffy" or uncertain doer seems always to have marked the Apricot.

GRAPES.

In Grapes we had sixty years since such first-rate varieties as Black Hamburg and Muscat of Alexandria, two varieties that promise to be of the best sixty years hence; also the Frontignans, West's St. Peters, Syrian, and Black Prince.

It is the two first-named almost exclusively that have high reputations, and we have not in blacks, perhaps, with the exception of Madresfield Court, excelled the Hamburg in flavour; and certainly, of all the tribe, Muscat of Alexandria still remains the best. The more modern additions that now have good reputations are Madresfield Court, Gros Colmar, Alicante, and Lady Downes; and the best white is perhaps Mrs. Pearson or Lady Hutt. It is rather in Grape culture under glass that advance is shown, for has it not become a huge industry, and are not our Grapes unequalled in the whole world? What glass Grape culture will be sixty years hence baffles the mind of man to imagine.

PINES AND MELONS.

The culture of the Pine has materially declined in Great Britain during the past sixty years, but that is the only fruit showing a downward tendency. The Melon has advanced enormously, and is now chiefly grown in houses rather than in pits. Of the few varieties in cultivation in the thirties not one remains, but since then myriads of so-called seedlings have come and gone; and we still put a dozen of so-called new ones into commerce every year, not that the new ones are one whit better than were those which preceded them—but it is a little way we have concerning Melons that has at once its business as well as its comical side. When once we get a Melon that is ever first-rate in quality of flesh, and ever constant to that character, then shall we obtain a real acquisition.

FIGS.

Of Figs, the best of the old ones, some nine in number, are still grown, Black Ischia, White Marselles, and Brunswick, but these are being largely superseded by others of greater excellence, of which we have many. A roomy Fig-house is now frequently found in gardens—not one of the ordinary type, but such an one as is to be seen in the Chiswick Gardens, where the culture of Fig-trees in pots is so admirably displayed.

RASPBERRIES AND STRAWBERRIES.

There remains the Raspberry, the *personnel* of which has been entirely changed, and greatly for the better. There is no other important fruit to refer to but the Strawberry—still our earliest fruit to ripen in cultivation in 1837, the best known of those to-day being Koon's Seedling, Grove End Scarlet, and the Hautbois, although those two latter have very restricted culture. We have had introduced to commerce many fine varieties, the best of the older introductions being British Queen, Elton Pine, President, Sir J. Paxton, Sir C. Napier, and the French Viscontesse H. de Thury. These, in spite of newcomers, of which there have been legion, still hold their own; but a few of the latest introductions, notably Royal Sovereign and Latest-of-All, bid fair to be of permanent value. Messrs. Laxton, Mr. Allen of Gunton Park, Mr. Kitley, and Mr. Lovell, who have done so much to improve the Strawberry, have others also that

merit warm approval. Strawberry-culture, both under glass and outside, has, during the Queen's long reign, developed enormously; indeed, as with most other fruits, whilst we have been making improvements in quality, size, and productiveness all round, yet with patience and slowly, the development in cultivation, whether privately or in a market sense, has gone on literally by leaps and bounds, and happily it has proved to be eminently profitable as an industry also. Not the least interesting feature of it is, that employment has been in this way furnished to industrious thousands of our teeming population.

THE WEEK'S WORK.

THE ORCHID HOUSES.

By W. H. WHITE, Orchard Grower, Barford, Dorking.

Cypripediums.—*C. superbiens* (Veitch) is a plant frequently seen in indifferent health. It is injured by sunlight and even subdued light without shading will cause the leaves to assume a sickly hue. *C. Schlimi*, *C. Patrieum*, and the pretty hybrids, *C. Arthurianum*, *C. ventilarium*, *C. H. Ballantine*, *C. Niobe*, and *C. Statterianum*, are also extremely liable to injury from much direct sunlight. To keep these *Cypripediums* in good health, it is advisable, in addition to the ordinary roofshading, to place a sheet of tissue paper over them whenever the sun shines strongly. They delight in a thorough watering at the roots every few days, and on no account should the compost be allowed to become dry.

Lycastes.—At the present time the plants have started well into growth, and will soon commence to emit new roots from the young breaks. If reporting be necessary it had better be done at once, using pots of moderate size, which must be half filled with drainage. The compost should consist of equal parts fibrous loam, peat, leaf-mould, or dried cow-manure, with a little sphagnum-moss pricked in over the surface. Until the new roots have obtained a firm hold of the soil, very careful watering is necessary, as the young growths, like those of the deciduous *Calanthes*, at this stage, are prone to rot if too much water is afforded, although when well established they will take an abundant supply. *Lycastes* may be grown at the warmest end of the cool-house, and should be kept well shaded in sunny weather. While in full growth the foliage should be sponged occasionally to clear it of red-spider.

Eulophiella Pectoriana.—Newly-imported plants of this new species which may be starting into growth should be afforded some peat and sphagnum-moss in which to make root, the young breaks quickly emitting roots from the rhizomes. Owing to the rambling habit of the plant, a good deal of space is necessary for full development, and large, shallow pans are to be preferred to pots in which to grow it. It does best in a damp shady position in the East Indian-house or plant-stove. Like the allied species, *E. Elisabethae*, this species requires abundance of water whilst making its growth. I may mention that at Burford Lodge there is a strong, well-established plant, the newly-made pseudo-bulbs of which measure about 15 inches in length, and they bear ten large leaves, the longest of which is more than 4 feet in length.

Dendrobium Phalenopsis, &c.—This, the most beautiful of *Dendrobiums*, flowers late in the year, therefore at a season when most Orchids are out of bloom, and its long arching spikes produce numerous flowers, which vary in colour from white to rich crimson-purple. The plants have been at rest for the last six months, but growth having recommenced, they will require attention till growth is finished. For some time the young shoots are usually thin and weak, and the inexperienced cultivator will be under the impression that strong-flowering bulbs will not be produced; but such is not the case, the base of the shoots becoming hard, producing plenty of new roots, and rapid growth and strength ensue. If a plant should require potting into a larger pot, this should be done before the new roots push forth; or if the potting material is worn out, it should be picked from among the roots, and fresh compost afforded. Additional root-space should not be given, unless it be absolutely necessary. The plant thrives in a pot, shallow perforated pan, or teak-wood basket, and it is important

that whichever is preferred it should be small in proportion to the size of the plant. A very thin layer of peat and sphagnum should be supplied in which to root, and the compost should be made quite firm, and when packing the material around the plant, a few thick crocks placed edge upwards between the peat and the moss will assist the water to pass freely through. Place the plants in the hottest and sunniest position available, with the tops of the pseudo-bulbs almost touching the roof-glass. Very thin shading is required at any time, and then only for a few hours during the hottest part of the day. The plant, until it has become re-established, should not receive much water, but afterwards, and till growth is completed, it must not be allowed to become in the least degree dry. *Dendrobium Bensoue* and its varieties, *xanthium* and *album*, are now gone out of flower, and as the young breaks commence to push out new roots when only a few inches high, attention should at once be given to reporting, &c., doing this in exactly the same manner as I recommended for *D. Phalenopsis*. Similar treatment is required by *D. Parishii*, *D. rhodopetgerium*, *P. tariunum*, *D. atro-violaceum*, *D. stratiotes*, *D. lineale*, *D. bigibulum*, *D. strebleoceras*, *D. albo-sanguineum*, *D. Johnsonie*, *D. polyplebium*, *D. secundum*, and *D. superbiens*. As soon as the following species, *D. Dalhousianum*, *D. moebatum*, *D. calceolus*, *D. clavatum*, and *D. fimbriatum*, commence to grow, they should be afforded water abundantly, and kept warm and moist till such time as the terminal buds are completed. Other species, as *D. Wardianum*, *D. noble*, *D. cressianum*, *D. Boxalli*, *D. primuminum*, *D. cretaceum*, *D. litiflorum*, *D. Dominii*, &c., and those of the *D. Ainsworthianum* and *D. splendissimum* sections, now about midway through their growing season, should, if in health and growing strongly, be copiously watered, otherwise growth will be prematurely matured, and numbers of small useless breaks will be produced.

THE FLOWER GARDEN.

By CHARLES HERRIN, Gardener, Drogheda, Maidenhead.

General Work.—The bedding-out of plants for the summer display should be completed as soon as possible. Box edgings may be clipped. It is disadvantageous to do this work earlier, because the young growth resulting after the early cutting sometimes gets injured by frost, causing the Box to remain unsightly for some weeks. Carnations are fast throwing up their flower-stems, and these should be tied to neat short sticks, so as to keep the flowers erect and clean. Sow seeds of *Aquilegia* in boxes or on a border in the reserve-garden, from which they should be transferred to their flowering quarters as soon as large enough to handle conveniently.

General Remarks.—During the past few days the weather in the south has been warm, with genial showers, which will permit of the tenderest bedding plants being planted with safety. The designs of carpet-beds should be worked out true on the surface of the soil; to do this readily and distinctly, fine silver-sand is as good as anything scattered along the lines that are drawn by a pointed stick. If the ground-work, which usually consists of such hardy plants as *Sedum*, *Corastium*, *Herniaria*, *Golden Chickweed*, &c., has been planted some time, the filling-in of the pattern with the tender plants will be a comparatively easy job. A flat and even surface of foliage is not so pleasing in effect as when the system of using "dot" plants is adopted. These may consist of *Chamaecea*, *Palms* of small size, *Dracenas*, and similar subjects. In the flower-bed, in order to encourage free growth, *Pelargoniums* and *Calceolarias* should have their flowers removed for one or two weeks after they are put out into the beds, and the points of untidy long shoots taken out, so as to induce a more bushy habit in the plants. *Calceolarias* planted out some weeks since are now established, and in a condition to withstand drought better than those that were planted later in the spring. A mulch of very short manure, such as that afforded by a spent Mushroom-bed, will be of assistance to these plants if the weather be dry, especially if an occasional application of water be made. All kinds of bedding stuff recently planted will be benefited by a mulch of sifted leaf-mould or cocco-fibre refuse, and affording water towards evening if the weather be dry until the plants are partially established. Any roots of *Dahlia*s still out of the ground should be planted forthwith. The soil for *Dahlia*s should be fairly rich, and where borders are not in good heart, a small quantity of rotten manure should be placed under each root when planting them, just turning it in with the spade, and making it firm before and after planting. Stakes should be

put to the plants without loss of time, or these may be driven into the soil first, and the roots placed close to them. A maul of manure will render frequent waterings unnecessary.

Roses.—The Rose-maggot is getting troublesome this season, and resort must be had to hand-picking and squeezing the rolled-up leaves between the finger and thumb. The plants should be examined at short intervals of time for a few weeks for the maggot. Aphides are increasing amazingly, and the plants on walls and in the open beds must be syringed with tobacco or Quassia water, or being those with succulents at a temperature 120° to 130°. Frequently syringing the Roses with clear water does good during dry weather, as does an occasional application of weak liquid-manure.

FRUITS UNDER GLASS.

By F. HARRIS, Gardener, Easton Castle, Ledbury.

Melons.—Plants carrying ripe or ripening fruits must be kept drier at the root, or splitting may occur, and the flavour will certainly not be good. Fruits when ripening should be examined, and those which may have to be kept for a few days should be removed from the plants as soon as it is noticed that the rind has begun to open round the stalk, and if this be not attended to with thin-skinned varieties like Easton Castle and Victory of Bath, many of the fruits will burst their rind, and be spoiled in consequence. I have known fruits of Easton Castle, when the soil has been a little too moist during the ripening stage, and the weather very warm, to split all to pieces after being put into the fruit-room.

Succession Melons.—Plants with rapidly-swelling fruits should be afforded some bone-meal mixed with fine loam as a top-dressing to the hillocks, which will make a marked difference in the fruits in a few days. Be careful when affording water to the roots not to wet the stems between wind and water, and to use it at a temperature of not less than 85°. Melon plants in flower may be afforded a drier air during the setting period, and the female flowers fertilised daily about noon till the required number of fruits—three to five per plant—are seen to be starting off together; and when this is accomplished, all the flowers may be rubbed off. Let the lateral shoots be pinched back to one leaf each, and thus employ the energies of the plants in the growth of the fruits. Remove the lateral shoots of younger plants till the stem has reached the trellis, doing this sometimes, or the plants will be weakened by the exudation of the sap. Seeds of Melons may be sown once a week if a regular succession of fruits is required.

Tomatoes.—The early plants being now in full bearing, will require pretty constant attention in the matter of pinching out laterals, removing portions of the leaves to allow sunlight to reach the fruits; top-dressing and feeding, and taking the fruit when fully coloured, not allowing fruit to hang till it becomes dead ripe, as this causes loss of size in the remaining fruits, and exhaustion. Tomato plants intended for out-of-door fruiting should be got out as soon as they are properly hardened off. The growing and fruiting season of the Tomato in this country being a short one, only warm positions are found to answer. The plant does very satisfactorily in the open, if it have a warm site, with a wall or building on the north side. Let the soil be made firm, and very attention to affording water. Seeds of the Tomato for late autumn and winter fruiting under glass may now be sown in heat.

THE KITCHEN GARDEN.

By W. PORE, Gardener, Highclere Castle, Newbury.

Onions.—Autumn-sown Onions are this year showing a tendency to throw flower-stems. Remove these as soon as they appear, and the plants may afterwards be pulled up for early use as required—they will fail to form profitable bulbs. If bulbs are required of extra large size, for exhibition or other purposes, liberal supplies of liquid-manure should be afforded, and the soil around them frequently stirred with the hoe; or if the weather be showery, a sprinkling of some kind of artificial manure will be of decided benefit. Those sown out-of-doors in the spring will now require thinning, and if large bulbs are wanted, thin freely, allowing 9 or 10 inches between each plant, and afford one or two light dressings of guano during showery weather. If ordinary produce and good keeping qualities are desired, the thinning should be much less severe, 2 or 3 inches apart being sufficient if the rows are 12 inches distant from each other. Dust the plants frequently with fresh soil. Where small Onions are in daily demand, it will be

necessary to sow seeds every three weeks through the summer, the supply being kept up through the winter by sowing a boxful occasionally under glass. For this purpose the Queen or the Silver-skin varieties are excellent, being mild in flavour, and of nice colour.

Potatoes.—Mould up the tops as soon as these reach a height of 3 or 4 inches, drawing however a little soil up to the stems, a further earthing-up being done when they get higher. If a hoisting be given the land a day in advance, the surface will be in better condition for moulding, and weeds will be cut off. If the land be not rich, a dressing of mixed fresh soot and wood-ashes should be strewn along the rows before the hoeing and earthing-up are performed. The land that will soon be set free by the lifting of the early Potato crop should be levelled, and planted with Cauliflowers, Brussels Sprouts, Savoys, or Brassica of which the plants are then in fit condition for planting. If the weather and the land be dry, afford water both before and after planting. It is best to draw drills for these things, and soak these with water a few hours before setting out the plants.

Carrots.—Another sowing of Carrots may be made, choosing a short Horn variety. The seed may be sown in drills or broadcast, closer than is desirable for a main crop, 6 or 8 inches between the drills, and thinning out to 3 inches apart in the lines, affording enough space. Thin the plants before they spindle, and keep the beds free from weeds. A slight dressing of soot and salt, given before sowing the seed, acts as a deterrent to grubs and wireworms. If the principal sowing of Carrots has failed, wholly or partially, sow James' Late-maturing variety, this one keeping better in store than any of the short Horn varieties.

Broad Beans.—When the stems of Broad Beans reach a height of 12 inches, dig up the potatoes, and the Beans will thus be early, and the pods finer; and if very large pods are desired, thin the latter to three or four on a stem, and apply liquid-manure freely to the plants. Sow a good breadth if Broad Beans are required late in the season, making use of Early Longpod, or Beck's Dwarf Green Gem—an especially useful variety. Broad Beans should be sown on strong soil in good heart, but not freshly manured.

Leeks for the main crop should now be planted, these following the batch raised in warmth brought on for a time under glass. Choose for this vegetable a part of the garden that is rich and deep, such a soil needing no special preparation. In planting, draw deep drills with a hoe at 18 inches apart, and if the soil be dry, apply water to these the day previously, and dibble the plants deeply into the soil at 1 foot apart, but do not fill in round the plants, merely let a small quantity of the fine soil trickle in on to the roots. As the plants grow, the drills may be gradually closed, thus securing a length of blanched stem sufficient for ordinary purposes. Liquid-manure afforded twice or thrice during the summer will increase the size of the plants. Leeks for exhibition should be put out into trenches as for Celery, as previously advised, and be treated similarly. The early crop will require water in dry weather, a mulch of decayed manure, and to be afforded weak liquid-manure at each alternate watering, or a slight sprinkle of guano-water.

PLANTS UNDER GLASS.

By G. H. MAYCOCK, Gardener, Luton Hoop Park, Luton.

Tree or Perpetual-flowering Carnations.—The time has now arrived when these plants should receive their final top-dressing. For this purpose employ rich soil, half decayed, fibry loam, one-half; the remainder should consist of leaf-mould, rotten manure, lime rubble, and a fair proportion of coarse silver-sand and charcoal. Before commencing to pot, the plants should be freed from insect pests, and in any case it will be an advantage to fumigate them twice in succession; and if red-spider infest them, to dip the foliage in a suitable sort of insecticide. The most vigorous plants may be placed in 7-inch pots, and the others and those latest struck in 5-inch pots. Let the soil be made firm by hand about the old ball, and having afforded water, stage them in a greenhouse, cold frame, or shallow pit on a layer of finely-sifted coal-ashes. Keep close for a week, shading if necessary for that length of time; then admit air gradually at first, and increasing the amount daily, and at the end of the month stand them outside.

Nerium Oleander.—Plants which were not repotted in the spring may still receive a repotting or tubbing, employing a compost of loam three-quarters, peat one-quarter, and be placed in a light, airy house, and kept slowly growing. It is a mistake to keep

the Oleander in a shaded greenhouse, the shoots that are made therein being green and sappy and unlikely to bloom. The aim of the gardener should be to produce moderately large, short-jointed shoots, which are sure to flower well. Should the blooms not open properly or fall off, a position close to the glass should be afforded the plants. During the growing season Oleanders, being semi-aquatic, require plenty of water at the root. White-scale is their great pest, and red-spider is sometimes troublesome. Water soap-suds at 100° used when the plants are at rest will kill the former, and copious syringings with clean water clear off the latter.

Roses in Pots.—As the majority of these plants ar passing out of bloom, they may be removed to some spot in the open air where they are not exposed to full sunshine, the pots being sunk in a bed of coal-ashes. Those which are very well rooted will be benefited by doses of weak liquid-manure; and to keep mildew in check, the foliage should be dressed once a week with the following mixture:—To 2 lb. of soft-soap add one quart of rain-water, and boil slowly for twenty minutes, and strain through a cloth of soft water, place in a bottle and keep securely corked. For use, put half a pint of this mixture to three gallons of water.

General Work.—Remove the side-growths from Tuberoses which are showing flower, and afford the plants occasionally manure-water; those not pushing up flower-spikes should be kept on the dry side, syringing them, however, once a day, in order to check the increase of red-spider. A stock of loam of two sorts, light and heavy, should be carted in and stacked. Maintain a moist atmosphere in the Palm-house, and afford water abundantly at the root, but the drainage should be in good order, or a soddening and souring of the soil will take place; and syringe the plants heavily every day, morning and afternoon. Seedling Geraniums should be repotted and placed in a cool-house on a moist cool bottom.

THE HARDY FRUIT GARDEN.

By H. W. WAIN, Rayleigh, Essex.

Pruning of Wall Trees.—Simple as this operation is, the successful fruiting of wall-trees greatly depends upon the manner in which the operations are carried out. It is very essential for the gardener to possess definite notions of the end in view, and how to obtain the formation of a healthy fruitful tree in a reasonably brief space of time, by the removal of unnecessary shoots, and the retention of a sufficient number, and at such a distance from each other as will admit of their being perfectly ripened. The crowding of the shoots is recognised by the best gardeners as being a fault which must always be guarded against whatever the kind of fruit tree. Any succulent gross shoots should be nipped at the point or better cut back to the last sub-lateral, which has the effect of diverting the sap to the weaker shoots and strengthening these. In the case of the Apricot, Pear, Cherry, Plum, and espalier Apples, the fore-right shoots should be pinched back whilst soft to within 6 inches of their place of origin; standard trees should also have the points pinched out of luxuriant shoots, the superfluous growths being pinched back to within 2 inches of the base, which operations have the effects of preventing the crowding of the crowns with spray, and of causing the formation of fruit-buds.

The Peach and Nectarine and Morillo Cherry.—These fruit-trees demand the same kind of summer treatment. The young shoots should be laid-in with the shoots of last year, keeping them in position with short straight twigs; the fore-right shoots should be pinched-in severely, and terminal buds secured somewhat loosely in position with nails and shroud, or with raffia. The current year's shoots in young trees should be trained rather wide apart at the proper angle on either side of the central line, so as to enable the given space to be furnished within the period of two or three years on the extension system of training.

The Fig.—In the case of the Fig, the shoots which the gardener recognises as not being wanted for bearing fruit, or hindering the tree, should be cleared away before they acquire strength, and the desired number of leading shoots secured in their proper direction. The points of any very robust shoots, when these have reached 15 inches, and those of weak ones when 2 feet in length should be pinched-out, which will have the effect of balancing the current year's growth, by temporarily diverting the flow of sap to the weaker shoots.

EDITORIAL NOTICES.

ADVERTISEMENTS should be sent to the PUBLISHER.

Local News.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

Newspapers.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

Letters for Publication, as well as specimens and plants for naming, should be addressed to the EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be written on one side ONLY of the paper, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith. The Editor does not undertake to pay for any contributions, or to return unused communications or illustrations, unless by special arrangement.

Illustrations.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, &c.; but he cannot be responsible for loss or injury.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY,	JUNE 15	Royal Horticultural Society, at Drill Hall, Ryde Horticultural and Rose Show.
WEDNESDAY,	JUNE 16	York Floral Fête (3 days).
THURSDAY,	JUNE 17	Linnean Society.
FRIDAY,	JUNE 18	National Rose Society's Southern Show, at Portsmouth.

SALES.

TUESDAY,	JUNE 15	Sale of the Westrop Collection of Orchids, by order of G. O. Sloper, Esq., by Protheroe & Morris.
WEDNESDAY,	JUNE 16	Specimen Palms and Ferns, at Protheroe & Morris' Rooms.
FRIDAY,	JUNE 18	Imported and Established Orchids, at Protheroe & Morris' Rooms.

AVERAGE TEMPERATURE for the ensuing week, deduced from Observations of Forty-three years, at Chelwick.—60° 9'.

ACTUAL TEMPERATURES:—

LONDON.—June 9: Max., 54°; Min., 50°.
 PLYMOUTH.—June 9 (6 P.M.): Max., 59°; Jersey; Min., 47°; Aberdeen.

In anticipation of the sixtieth anniversary of the accession of Her Majesty, now close at hand, we publish this week several articles relating to the changes that have occurred in horticulture during the Queen's reign, and we give sundry illustrations of plants named in honour of the Sovereign. The enormous development in horticulture, whether for purely decorative or for useful purposes, during the past sixty years is a matter of general observation. What was the luxury of the few has become the necessity of the many. This in itself is a striking testimony to the peaceful spirit of progress that has characterised the reign as a whole. A vast extension of Orchid culture in particular has taken place since Her Majesty's accession. If some plants of this family are priced in hundreds of guineas, others, almost as beautiful, may be had for a shilling or two, and may be grown at as little cost as a Pelargonium. Palms are hawked about the streets on costermongers' barrows, and the windows of the humblest can be brightened at the lowest cost.

Of the plants of which we now give illustrations, we must first make mention of the Rose "Her Majesty" (fig. 143), one of the finest of the late Mr. BENNETT'S seedlings, and for the opportunity of illustrating which we are indebted to the courtesy of Mr. MAWLEY, one of the Secretaries of the National Rose Society. It was grown under glass, and flowering thus prematurely, the bloom is not of the full size.

The Gloxinia issued by Messrs. SUTTON under the name of "Her Majesty" (fig. 142, p. 381) is the noblest white Gloxinia yet raised. In

form, substance, purity, it ranks foremost of its class. Messrs. SUTTON & SONS, Reading, kindly gave us the means of figuring it.

The "Victoria Regia" is now well known to visitors to Botanic Gardens as the noblest and most remarkable of Water-lilies. In this country it is grown in tanks under glass, but in the United States it is grown in heated ponds in the open air, as shown in an illustration furnished by C. NASH, Esq., which we shall reproduce on another occasion. At Singapore no artificial heat is needed, as may be judged by the woodcut in the volume for February 16, 1878, p. 209. (See fig. 139, p. 378.)

Among Orchids named after HER MAJESTY, one is called Queen Empress (see fig. 139, p. 378). It was shown at the Temple Show by Messrs. LINDEN. It is one of the finest of the varieties, and received an Award of Merit. It is a perfect flower of good form and very fine colour, though in the richness of the purplish-crimson of the lip, C. M. Moortebekensis and two or three of the other varieties were perhaps superior to it.

"Queen Victoria" is the name bestowed upon a very beautiful form of *Odontoglossum crispum*, shown at the Temple by Messrs. HUGH LOW & CO., with bold flat segments heavily blotched with purplish-brown, and with the white three-lobed lip similarly marked and fringed (see fig. 140).

"Victoria" Daffodil was exhibited at the Spring shows by Messrs. BARR & SONS, and when we say that it surpasses Empress and Horsfield, little further is needed in the way of eulogy. The segments of the perianth are spreading, unusually broad and pure white, whilst the bold corona is of a delicate yellow, and frilled at the margin.

Victoria Nectarine (fig. 144) is one of the acquisitions of Messrs. RIVERS, described in a note on p. 380.

** In our next issue we shall, by special permission of HER MAJESTY, give illustrations and descriptive notes, necessarily brief, of the gardens at Buckingham Palace, not previously visited for the purpose for nearly a quarter of a century, Frogmore, Osborne, and Claremont, together with notes on some of the memorial trees planted by the Queen on different occasions.

LINNEAN SOCIETY.—At the evening meeting, which will be held on Thursday, June 17, at 8 P.M., papers will be read:—I. "On the Distribution of *Primula elatior*, Jacq.," by Mr. MILLER CHRISTY, F.L.S. II. "On the Acari collected by Mr. H. FISHER, Naturalist of the Jackson-Harsworth Polar Expedition, at Cape Flora, Northbrook Island, Franz-Josef Archipelago, in 1896," by Mr. A. D. MCELRAE, F.L.S. III. "Further Observations on Stipules," by Sir JOHN LEBBOCK, Bart. IV. "On Minor Tension Lines between Plant Formation," by Professor CONWAY MACMILLAN (Univ., Minnesota).

ROYAL HORTICULTURAL SOCIETY.—The next meeting of the Fruit and Floral and Orchid Committees will be held on Tuesday, June 15, in the Drill Hall, James Street, Westminster. A lecture on "The Physiology of Plants" will be given by Prof. S. H. VINES, F.R.S., at 3 o'clock.

ROSE SHOW FIXTURES FOR 1897.—The following additional Rose-show dates are kindly sent by Mr. E. MAWLEY. Previous lists appeared in our issues for March 20, April 10, and May 15 last:—June 16 (Wednesday), York (three days); 30 (Wednesday), Farnham; July 6 (Tuesday), Diss; 8 (Thursday), Bedford, Farnham; 10 (Saturday), Manchester; 31 (Saturday), Liverpool (two days).

HORTICULTURAL CLUB.—The usual monthly dinner and conversation will take place on Tuesday

evening, June 15, at 6 P.M. The subject for discussion will be "A proposed Memorial to Dr. ROBERT HOOG."

HAMBURG EXHIBITION.—We are informed that a gold medal and a prize of honour of the value of 1000 marks (£50) has been awarded to Mr. ANTHONY WATERER, of Knap Hill Nurseries, for Rhododendrons, &c.

JUBILEE COMMEMORATION METHODS are bewildering in their variety. Perhaps the following example is as worthy of imitation as any:—Messrs. ED. WEBB & SONS, Royal Seed Establishment, Wobley, Stourbridge, intend to give to the whole of the children of the district (nearly 2000) "a substantial tea and medals to commemorate the event."

MESSRS. SUTTON & SONS, READING.—On Tuesday, June 1, a dinner was given by Messrs. SUTTON & SONS, Reading, to the whole of their employees, to commemorate the entering into partnership of Mr. MARTIN HUBERT FOUQUET SUTTON, the eldest son of the senior partner of the firm—Mr. M. J. SUTTON. The total number of the employees and their wives who sat down to dinner in one of the spacious rooms of the seed establishment was about 500. The tables were decorated with cut flowers and plants in pots, and the menu was of the best. The chair was taken by Mr. MARTIN JOHN SUTTON, supported on his right by his father, Mr. MARTIN HOPE SUTTON, and on his left by his son, Mr. M. H. F. SUTTON.

ISLE OF WIGHT HORTICULTURAL IMPROVEMENT ASSOCIATION.—The monthly meeting of the Association was held on Saturday, June 5, at Sandown. Dr. J. GROVES, B.A., J.P., is the chair. An excellent paper contributed by Mr. ALFRED OUTRAM on "The Progress of Horticulture in America" was read by Mr. C. ORCHARD. The paper, which was highly appreciated, was accorded a vote of thanks. Exhibits of various kinds came from a number of gardeners residing in the Island.

DOUBLE WHITE ANEMONE "THE BRIDE."—Messrs. E. H. KREMLAGE & SON of Haarlem have favoured us with cut specimens of this pretty variety, which originated in their nurseries as a sport from the well-known single Anemone of the same name. The flowers, when they first open, are of a greenish tint; but as they expand, they form a fully double, pure white flower.

TERATOLOGY.—M. CASIMIR DE CANDOLLE, in discussing the relations of teratology to the problems of evolution, comments on the treatises of Dr. MASTERS and Professor PENZANCE. M. DE CANDOLLE distinguishes between those forms which he calls ataxinomic, which have no relation to any normal condition, and those variations which are represented normally in other species, and present an analogy to specific differences. These, which M. DE CANDOLLE calls taxonomic variations, have taken a part in the evolutionary progress. It is obvious (says M. DE CANDOLLE, in conclusion) that the following inferences may be drawn:—If the teratological variations of the floral organs have taken any share in progressive evolution, those whose progress has resulted in the present complex forms are now the most uncommon, while those monstrosities which are now the most frequently met with indicate, at any rate in the case of phanerogamic plants, a tendency towards the primitive simplicity of conformation (reversion). Consequently, if the progressive taxonomic monstrosities of the flower were not formerly more frequent, and more especially if they were not more varied than they now are, they would have been powerless to produce, by the sole agency of natural selection, that evolution which is supposed to have resulted in the production of the most highly-developed forms of the present day.

PRESENTATION TO MR. INGLIS, OF HOWICK.—Recently Mr. D. INGLIS, who for the last twenty-two years has acted in the capacity of head gardener to Earl GREY of Howick, and who during that time has made himself extremely popular, not only at Howick, but in the district generally, was made the



FIG. 113. ROSE "HER MAJESTY": COLOR PALE ROSE. (SEE P. 378.)



recipient of a handsome tulip rosewood cabinet by the parishioners of Howick and other friends on his leaving the district to take up the duties of head gardener to his Grace the Duke of Buccleuch, at Drumlaurig Castle, in Dumfriesshire. The presentation took place in Copley Hall, and Mr. J. H. MANSFIELD presided. Mr. and Mrs. INGLIS have also been the recipients of a silver tea-service from the Earl and Countess GREY; and a few days before leaving Howick Mr. INGLIS received a letter from EARL GREY from Fort Salisbury, in Mashonaland, expressing sincere regret that he should not find Mr. INGLIS and his family at Howick on his return. Mr. INGLIS has been succeeded at Howick by Mr. ACKROYD, from Bevingborough Hall Gardens, near York.

POSOQUERIA MACROPUS.—From Messrs. W. DALCHIN & SONS, Hassecks Nurseries, Sussex, come three of this attractive stove-plant, also known as *P. longiflora*. The plant, we are told, bears thirty fine frusses of long, tubular, white, fragrant flowers. That it is not more grown is, as Messrs. DALCHIN say, a matter for surprise, as it is certainly one of the most handsome of stove-plants. A figure of it was given in our columns on May 9, 1896, p. 687.

STOCK-TAKING: MAY.—It is worthy of note that, notwithstanding the very hard work now going on in the matter of jubilation, the busy British lives of industry find time to beat the record in the matter of imports, and to record a fair balance in the matter of exports. Thus, amongst other things, the Trade and Navigation Returns for the past month show that the imports foot up a balance of nearly three millions sterling as compared with May, 1896—or, say, £36,336,348 for the past month, as against £33,349,988 for the same period last year. The increase in the five months of the present year over the same period last year is placed at £7,895,740. As to the increments of the past month, they are to be found under nearly every sectional heading—decreases being comparatively trifling. The usual excerpts from the "summary" table of imports are as follows:—

IMPORTS.	1896.	1897.	Difference.
	£	£	
Total value ...	33,349,988	36,336,348	+2,986,360
(A.) Articles of food and drink—duty free ...	10,625,363	12,231,457	+1,606,524
(B.) Articles of food and drink—dutiable	1,716,187	1,967,998	+251,771
Raw materials for textile manufactures ...	5,613,257	5,160,602	-452,655
Raw materials for sundry industries and manufactures ...	3,485,085	4,143,172	+658,087
A) Miscellaneous articles ...	1,141,078	1,072,164	-68,914
(B) Parcel Post ...	58,267	71,511	+13,244

However much disquiet may be felt in the matter of foreign relations, no such effect seems to be worth noting in respect to the general volume of trade. By the way, there seems to be but little doubt of the good effect of bringing together in London all the dignitaries of our Colonial empire.

IMPORTS.	1896.	1897.	Difference.
Fruits, raw:—			
Apples bush.	88,252	128,928	+43,676
Cherries "	7,170	56,278	+49,108
Plums "	853	3,500	+2,647
Pears "	14	602	+488
Grapes "	2,914	3,843	+929
Unenumerated ... "	74,425	19,465	-54,960
Onions "	501,217	+3,939	-37,278
Potatoes cwt.	550,959	385,940	-165,019
Vegetables, raw, unenumerated ... value	498,102	418,244	-79,858

EXPORTS.

Last month we took occasion to note that soon the then reported decrease would be wiped off; this hope has not been quite realised, but the amount has been

reduced by nearly half a million, or to £265,224. Perhaps, as some suggest, manufacturers have been so busy on the "home" account as to prevent them filling foreign orders to their full extent; at any rate we are informed that, as with home orders, so with those for both colonies and foreign countries, both will have to be satisfied for the present with what they can get—just as it was for some time last year in most textile fabrics. Recently we had occasion to call attention to the good work performed by consular agents abroad. There is occasion this month to notice a report connected with the "management" of German trade with Baltic ports—the methods employed in order to oust the British trader from that portion of the globe. One almost naturally thinks of "Nelsen and the North" in this connection, and it may be as well to note that our traders will find in Copenhagen every possible accommodation for spirited trade at very low figures, and outside of this will be found a kinder feeling towards ourselves than is shown to any other class of manufacturer's agents—a knowledge that "goods" outlast "bills" by ever so long; and that is saying something. The total value of exports for May is £19,322,146, against £18,835,243—an increase on the month of nearly half a million sterling.

SARACA INDICA.—This plant, perhaps better known under the name of *Jouesia Asoca*, forms a low, erect-growing tree, native of the Himalayan region, Ceylon, and Malaya, and occurs up to an altitude of 2000 feet in Kumaon. This tree is dedicated to Kama, the Indian God of Love, and is sacred to the Hindus, who know it under the name of Asoka, which means "tree without grief," or "free from pain." The rich orange-coloured blossoms, in the form of dense, sessile, corymbose, axillary panicles, with reddish bracteoles, are highly fragrant, and are employed in India for table decoration. The tree is described as a most beautiful one when in full bloom, and is usually planted in the neighbourhood of temples. The bark contains gallic acid, and is extensively used by native physicians in uterine affections. A plant of this has been in bloom in the Palm-house, and it also forms the subject of one of Miss North's paintings in the gallery at Kew. *J. M. H.*

IRIS GATESII.—Messrs. WALLACE & Co., of Colchester, obligingly forward us a bloom of this species, exhibited by them at the Temple Show. It is one of the largest and most remarkable of the bearded Irises, of a greyish or cream colour, thickly bestrewn with minute brownish spots. A full-page illustration was given in our columns on July 5, 1890.

AN EXHIBITION OF BRITISH-GROWN FRUIT will again be held at the Crystal Palace under the auspices of the Royal Horticultural Society. Though some slight delay was experienced in obtaining the £100 towards the prize-money, that the society stipulates as a necessary condition to holding the show, this amount has since been subscribed, and from the schedule before us we observe that the dates fixed are those of September 30, October 1 and 2. In the wording or arrangement of the classes we note but little deviation from that adopted previously, that upon the whole has been satisfactory, though it affords little scope for individual exhibitors to display their produce in a decorative manner. To prevent disappointment on the part of exhibitors, the schedule includes a list of dessert and culinary varieties of Apples and Plums, and a list of culinary Pears. We may add that the cost of the gardeners' luncheon upon the first day has been reduced to 3s. for each person.

PUBLICATIONS RECEIVED.—*Bulletins of the Botanical Department, Jamaica*, for February and March. The earlier of these two issues includes papers on Soil Ferments important in Agriculture, the Spraying of Plants, Fungous Diseases of the Grape, Fungicides, Jute, and other subjects; the March *Bulletin* deals with: Manures and Oranges, Manures and Coffee, Report on Sugar Cane, Grass-Firing, Collecting Juice of Papaw, and similar topics.

—*Agricultural Gazette of New South Wales, March.*—*Queensland: Past and Present.* This is an epitome, by Mr. THORSHILL WEEBON, of the resources and development of the colony up to 1896. This volume is issued under official sanction, and is intended to furnish such information as is otherwise only to be found scattered about in more voluminous and general treatises. The value of the book before us may be inferred from the fact that the contents are devoted to a survey of the geography, history, constitution and government, population, law, defence, production, trade and commerce, and equally important statistics relating to Queensland. The appearance of the *Bulletin* is especially interesting this year, when our attention is everywhere attracted to the progress of the last half century.—*Report of the Viticultural Work during the Seasons 1887-93.* This volume is issued from the University of California, College of Agriculture, and should prove valuable to present and intending Vine-growers.—Southern California Acclimatizing Association sends a *General Catalogue and Garden Guide for May*, which includes "Summary Description, Degree of Hardness and Hints to Culture of 1,500 sorts of Plants." The *Handbook* treats of Palms and Cycads, Bamboos, decorative plants, fruit-bearing and economic plants, trees and shrubs suited for various positions, pot-grown, climbing, bulbous, and other plants, Californian native plants, and other varieties. The *Catalogue* comes from Santa Barbara, California, U.S.A.—*Resistant Vines*, from the University of California, College of Agriculture. This is an appendix, written by Mr. A. P. HAYNE, to the *Viticultural Report*, which we noticed just above.—*Bulletin of the Agricultural Experiment Station, Baton Rouge, Louisiana.* Devoted to a paper on Leguminous Root Tubercles, by Mr. W. R. DODSON.—*Prospectus of the Queensland Agricultural College, February.*—*Annual Report of the Agricultural Experiment Stations of the Louisiana State University for 1896.*—*Studies of American Grasses* (U.S. Department of Agriculture) includes, 1, New or little-known Grasses, by F. LAMSON-SCHIBNER; and 2, Leaf-structure of *Joavea* and of *Eragrostis obtusidorsis*, by Miss E. L. ODEN.—*Agricultural Journal, Cops of Good Hope.*—*On Insects collected by Dr. Abbott on the Seychelles, Aldabra, Gloriosa, and Providence Islands*, by MARTIN L. LINNELL (Smithsonian Institution, U.S. National Museum).—*Florists' Exchange, New York.*—*Tropical Agriculturist.*—*American Florist, New York.*—*Gardening, Chicago.*—*Führer durch die Gartenbau-Literatur*, Ludwig MÜLLER, Erfurt.—*Wiener Illustrirte Garten Zeitung.*—*Möller's Deutsche Gärtner-Zeitung.*—*Les Eperes du Genre Anagrotus*, par M. E. ROZE: Extrait du *Bulletin de la Société Mycologique de France.*—*Tijdschrift voor Tuinbouw and World of Science.*—*Mothers and Daughters.*—*Nature Notes.*—*Lindens, February to March.*—*The Orchid Album*, vol. xi, part 132.—*La Semaine Horticole.*—*Möller's Deutsche Gärtner-Zeitung.*—*Le Jardin.*—*The Florist's Exchange* (New York).—*Garden and Forest* (New York).—*The American Florist* (Chicago and New York).—*American Gardening* (New York).—*The Forester* (Princeton, New Jersey).—*The Canadian Horticulturist* (Ontario).—*The Botanical Gazette* (Chicago).—*Proceedings of the Academy of Natural Sciences of Philadelphia*, part iii, September, October, November.—*Botanische Jahrbücher für Systematik, Pflanzengeschichte und Pflanzengeographie* (Leipzig).—*Notizblatt des Königl. botanischen Gartens und Museums zu Berlin.*—*Gartenflora* (Berlin).—*Die Herbarien der Confereen*, von Dr. KARL FRIEDRICH VON TURBEV (München).—*Soumer-Adrecks aus den Berichten der Deutschen Botanischen Gesellschaft* (Berlin), Jahrgang, 1897.—*Botanisches Centralblatt.*—*L'Italia Agricola Giornale di Agricoltura.*—*Revue Scientifique.*—*Comptes Rendus de l'Académie des Sciences.*—*Chronique Orchidéenne* (Supplément mensuel au Dictionnaire iconographique des Orchidées).—*Bulletin de la Société Nationale d'Acclimatation de France*, La Longevité des Graines, par Ch. NAUDIN.—*Annales Agronomiques*, May 25.—*Bulletin d'Arboriculture*, &c., Mai.—*Revue Horticole*, Juin.—*Le Moniteur Horticole.*—*Revue de l'Horticulture Belge.*—*On the Purchase in Europe of Carrot Seed for Famine*

Relief in India (India Office).—*Natural Religion* ("an irregular epic for regulated minds.")—*Journal of Botany*.—*English Mechanic and World of Science*.—*Pharmaceutical Journal*.

PLANT PORTRAITS.

CELOGYNE MASANGAKA, Robb, l. in *Concl. Chron.*, 1878, p. 684; *Lindley*, t. XLVIII.

CHRYSA LATEVENS, Durand et de Wildeman.—A white-flowered species from the Congo State. *Rue de l'horticulture Belge*, May.

CYPRIPEDIUM LAWRENCEANUM VAR. VERIDUM.—A form with the standard marked with green stripes of a white ground, lateral petals half-rose. *Lindley*, t. XLVI.

CYPRIPEDIUM × MASSALIANUM, Weathers, in *Gard. Chron.* (1893), XIV, p. 267, c. ic.; hybrid between *superficiare* and *Rothschilliana*; *Lindley*, t. XLIX.

DENDROBIUM JOHNSONÆ, *Garden*, April 10.

DRACENA ARBOREA. (O)—Tall, Palma-like species, with a terminal tuft of lanceolate leaves, surrounding a central, much-branched, pendulous panicle; fruits globose, red, of the size of a small Cherry. *Gartenflora*, t. 1438.

DRACENA GOSWAMIANA, *Garden*, April 24.

LOBELIA SYLVICULTA, *Mechan's Monthly*, April.

ODONTOGLOSSUM CRISPUM VAR. SPECTABILIS, Lind.—A strong variety, with flat, broad segments of a white colour, with a large central reddish-brown blotch; disc of lip yellow, anterior portion spotted. *Lindley*, t. CIII.

ODONTOGLOSSUM HENSEWILLIANUM VAR. GRANDIFLORUM, Rolfe, in *Gard. Chron.*, 8 s. VI, p. 67; *Lindley*, t. DLXV.

PERL. SOUVENIR DE LEROU-DURAND, *Bulletin d'Arboriculture*, &c., April.

PEIMULA OROSCITA, *Garden*, May 1.

VANDA SANDERIANA, Robb, f. *Lindley*, t. DLXVIII.

THE GARDENS AT THE VICTORIAN ERA EXHIBITION, EARL'S COURT.

THE directors of this undertaking have secured the services of Messrs. John Laing & Sons, nurserymen, Forest Hill, to lay out their grounds at Earl's Court. They have carried out the task in a most pleasing manner, and in harmony with Mr. Iure Kiraly's ideas. The western gardens, where over 5,000 zonal Pelargoniums (chiefly Henri Jacoby and others) have been planted, are exceedingly effective.

Improvements have been made in the lawns surrounding the Welcome Club, Messrs. Laing having here placed a group of fine named varieties of Rhododendron hybridum. A prominent position near the "Panorama" is pleasantly furnished with beds of Roses, Ivy-leaf Pelargoniums, with an undergrowth of Musk, and two beds of the Mrs. Henry Cox Pelargonium.

Crossing the bridge, the radiant "Queen's Court Gardens" is reached. Here the bedding-out is of a massive and effective character. Small groups of Pelargoniums backed with shrubs stand in each corner of all the stairways. Around the tower there are long borders of Henri Jacoby, salmon-coloured and white Pelargoniums, with scroll edgings; and opposite to these are two massive round beds filled with Pelargoniums in variety. Appropriate scrolls surround the beds, planted with carpet-bedding plants representing a royal crown, V.R., 1897, &c. In this vicinity there are various effective designs. The walk from the West Prompton entrance is flanked by massive beds of Pelargonium Raspaill and white-flowered Marguerites, edged with Golden Feather and dwarf blue Lobelias, *J. B.*

ORCHID NOTES AND GLEANINGS.

ORCHIDS AT WOODHATCH, REIGATE.

ALTHOUGH Mr. T. B. Hayward does not send up groups of Orchids to the Temple Show, it is not that he lacks them. Woodhatch lies just a little out of the beaten track of wayfarers, but a visit there, especially by orchidists, and particularly at this time of year, is amply repaid, for the collection under Mr. Salter's care is not only a very fine as well as a comprehensive one, but is throughout in splendid condition. Formerly, in one or two houses, owing to the lack of atmospheric motion under the stages, some things did not thrive so well as could be desired. Now that the stages are open the effect is remarkable,

and every plant in these houses wears an aspect of health that may well be described as robust, and clean as well can be.

The first house entered is of moderate dimensions, and is but a lobby as it were to the Orchid galleries beyond. Here *Odontoglossum crispum* luxuriates in variety, and especially noticeable is *Masevallia Chimeræ*, one of the most striking of the whole family. Beyond is a house chiefly filled with Miltonias, of which there are many superb varieties. The most striking of all is that rare and splendid form *Daisy Hayward*, carrying two noble spikes of flowers. These are of great size and substance, while, just slightly tinged with rose, which as the flowers age disappears, and they become pure white. It is, indeed, a gem. Very fine, too, is *Miltonia Cobbiana*, having flowers nearly white, and of great size. Much deeper in colour than are the flowers of the type, are those of *M. radiata*, which are quite of a bright rosy-red. Some forms have lesser flowers, but beautiful tints; indeed all, and the variety is considerable, are of high class form and quality. *Dendrobium suavisimum*, both in this and in other houses, is flowering finely. The third house is largely devoted to *Phalaenopsis*, of which most beautiful, as well as pure in colour, are amiable *grandiflora* and *Schilleriana*, all having fine spikes of bloom, and leafage beautifully marked and very stout. Then follows a long house devoted to *Odontoglossum* and *Masevallias*, the paler tints and graceful forms of the *crispum* spikes combining most effectively with the small shield-like and brilliantly coloured spathes of the latter plants. Of *O. crispum* there are some grand forms, the flowers not only exceptionally large and stout, but also prettily fringed on the edges. Very few of these have varietal names, yet, if shown at the Drill Hall, they would probably receive high honours. In any Orchid album the best of these fine forms should be represented. The lack of names renders special or individual references out of the question. They want to be seen to be appreciated. *Oncidium superbissimæ*, having two huge spikes of bloom, is a very fine feature. Of *Masevallias*, *Veitchi*, *Harryana*, *ignea*, *Schlimi*, and *Chelsoni*, are in full bloom, and exhibit exceedingly rich coloration. These are all, of course, well known, and require no description.

Then follows a long house filled with *Cypripediums* on the front stages, and *Vandas* and *Aërides* at the back. Of the former, *C. Lawrenceanum*, carrying many flowers, is very fine; *Curtisii* is good, so also is *villosum*, with its oddly-coloured brownish-yellow flowers. A very beautiful form is *C. ciliolare*; and of hybrid production, a very interesting variety is *T. B. Hayward*. *Exul* is a striking form, with its long dorsal petals; so also is *graude*, the petals hanging down some 10 inches in length. *C. leuchorrodia* is a very beautiful variety, and *Victoria Mariae* is extremely interesting. There is also in the house a splendid batch of *C. bellatulum*, some varieties having not only unusually fine but heavily-spotted flowers of great beauty; these are in 9-inch pans, and the plants are of corresponding breadth. *Thunia alba* and *T. Bensonæ*, the flowers having rich violet shading, are prominent objects on the back stage, and in the succeeding house *Thunia Marshalliana*, flowers pure white, with large orange lip, is a lovely thing. Here is a large batch of seedling *Cattleyas*, *Dendrobiums*, &c., the products chiefly of crosses made by Mr. Salter. These are all in thumbs and small 60's, and are thriving admirably. Really Orchid-raising from seed seems so little difficult that should native habitats fail, our home stocks may be in time maintained by home-raising from seed. This house contains chiefly a large batch of *Dendros*, many of them grand pieces, and just now putting on splendid growths.

Lastly, comes a farther long house, filled with *Cattleyas*, chiefly *C. Mossiæ*, and including numbers of grandly flowering superb varieties; *C. bulbosa*, *purpurata*, *russelliana*, and many others, glorious to behold. *C. Mendell* and its forms have been fine, but are now getting over. *Vanda corulea* is represented by capital pieces. Altogether, Mr. Hayward has not only a large but also a representative collection of Orchids, of which any gentle-

man may well be proud, and the culture and treatment furnished could not be excelled.

Cannas seem to be highly favoured, as in another house these in large pots are very effective—indeed, may be described as brilliant. Very beautiful varieties are *Francesque Morel*, orange-crimson; *Comtesse d'Estolte*, yellow, spotted red; *Progression*, orange, with rose spots; *Sophie Buchner*, orange-red; *Antoine Bartrone*, orange, dark spots; *Souvenir de Jeanne Cheraton*, rich crimson; *President Chardon*, orange-buff; *Kaiser Wilhelm*, rich reddish magenta; and several others.

Tree *Carnations* are largely represented; and a house filled with huge, grandly-grown herbaceous *Calceolarias* in rich variety shows that flower culture is representative; whilst *outdoor Roses* are splendidly done by thousands, and are in their season a wonderful feature. *A. D.*

BELGIUM.

ON May 29 I visited the Château de Botelaer at Deurne, near Antwerp, and there, among the many Orchids in flower in the houses I noticed the following:—*Miltonia vexillaria*, in a pot 8 inches across, had 30 spikes, and 220 flowers; *Lycaste Deppei*, with very pure white petals; *Cochlidia Nitzliana*, flowering freely and abundantly, one specimen had two branches with twenty flowers on each, massed in a wide-spreading truss measuring 3 inches across; hundreds of flowering plants of *Mesopidium vitulinum majus*; a fine *Odontoglossum Skinneri*, the lip violet-lilac, and petals dark chocolate brown, and many plants of *O. crispum*.

In another house was *Dendrobium suavisimum*, the lip bearing a brownish-red spot; *Nanodes Meduse*, well flowered; *Schomburgkia thibeticæ*; a fine *Angulos Ruckeri* and *Odontoglossum citreum*, with all the parts of the flower speckled. The nice, fond of eating the succulent flower-stems of this species, have wrought much havoc in the house. In the *Cattleya*-house were many fine specimens of *C. Mossiæ*, *Mendell*, *Warneri splendens* and *luteola*; *Lælia grandis* and *purpurata*; and *Vandas* and *Angreæums*; also a fine collection of *Cypripediums*, including *C. Salieri*, *exul*, *Thomsoni*, *Kimbhallianum*, and *ciliolare*. *Ch. de B.*

WOBURN FRUIT-FARM.*

"ALTHOUGH the endeavour to derive pecuniary profit from the undertaking has never been taken into account, yet the commercial aspects of fruit-growing receive consideration at the farm. Certain plots of ground have been planted in ways suitable for farmers, market growers, and cottagers respectively, and careful accounts are kept of each plot separately, so that the cost and profit of the various methods of cropping the ground may be ascertained.

Every investigation, however abstruse or scientific in its nature, must be considered as having a prospective practical value if it tends to increase our general knowledge of the subject, and in this light may be regarded a large number of the questions now under investigation at the farm. There are, for instance, sixty experiments on Apple-trees, in which different methods of planting, pruning, manuring, &c., are being tested, and the following may be mentioned as an instance of one of the most striking results already obtained. It is a common practice in farmers' orchards all over the country to allow grass to grow around the young trees, but it has been proved by our experiments that this practice reduces the amount of growth of the trees to one-eighth of that of similar trees round which the soil has been kept open.

Apple-trees are naturally those which occupy the greater part of the farm, the Apple being the most important fruit for English growers; but the other fruits which are hardy and thrive out of doors in England are also being investigated, and all our experience hitherto goes to prove that the failure of anyone embarking on fruit growing in the neighbourhood would not be due to any deficiency of crop. This is

* Extracted from *A Great Agricultural Estate*, pp. 166—171. Noticed in our columns, p. 361.

important, inasmuch as the ground on which the farm is situated possesses but few apparent advantages for fruit growing. It has a gentle slope to the south-west, but is much exposed to wind; the soil is rich, but is heavy and shallow, there being only about 9 inches of good soil, below which there is a bed of very stiff clay. The ground is mostly low, with a

furnish a supply to those tenants on the estate who wish to embark on fruit-growing, or to fill up vacancies in existing orchards. There has not, at present, been time enough to develop fully the functions of the fruit-farm in relation to the estate, but it is proposed that details of all the orchards on the various estates, whether in Bedfordshire or elsewhere, should be

the interest of the estate, that the work of planting and of tending the trees for the first year should be carried out by experienced persons; and so far as our present experience goes, we have found the tenants very ready to avail themselves of these advantages.

Use will probably be made of the fruit-farm for educational purposes in connection with the County Council farm school; and it is also proposed, eventually, to give evening or other lectures on fruit-growing for the benefit of all who may care to attend. It has been considered advisable, however, not to start any lectures of this sort until we shall have obtained from personal experience a better knowledge of the commercial prospects of fruit-growing in the district, lest we should induce some to embark on an industry which could not be conducted successfully. For the same reason we have been careful to avoid even an appearance of advocating fruit-growing for the farmers, and consider that the initiative should be left entirely to them.

At present the fruit-farm extends over twenty acres, and nearly the whole of the ground is already planted. The planting, however, has not been carried out to any great extent in that close manner which would be necessary for commercial purposes, for many of the experiments will not be complete till the trees have obtained maturity, and till they occupy much more space than they do now, and any cropping of this space would modify the soil in a manner which might render the results of the experiment doubtful. For this reason alone, independent of the expense of the weighing and measurements and other scientific work necessary in experiments, the farm as a whole could never be expected to yield a money profit, or even to pay its expenses; indeed, it is probable that it will cost annually about £500, without charging interest on the capital expenditure. This latter has been about £3300.

The staff includes a resident manager, and on the average seven or eight men and boys, the amount of labour required varying considerably with the time of year.

Besides the manager's house and the necessary sheds, there is a garden-house in the ground, which is used for exhibition, lecture, or reception purposes. A store-room for the fruit, and a new office, are in course of erection."

HOLLAND.

HORTICULTURAL NOTES.

THE following horticultural notes were taken during a recent visit to Holland.

Rotterdam Zoological Garden.—Here a new conservatory has been built, measuring about 82 feet long by 40 feet wide, and 35 feet high; this is but part of a projected building, which, when completed, will be 130 feet long, with two aisles 32 feet long connected with the principal erection by low houses 60 feet long by 10 feet high.

In the completed building I noticed *Balanium antarcticum* with a stem 22 feet high; *Todea barbara*, 3 feet in circumference; *Knightsia excelsa*, *Banksia*, *Cussonia*, and others. Among the Palms in the winter-garden, I would mention *Livistonia sinensis*, and *L. oliviformis*, with stems 9 feet high; *Scaevola elegans*, 18 feet; *Cocos flexuosus*, and *Washingtonia robusta*. In the aisles of the winter-garden are *Encephalartos Lehmanni* of great beauty, and *Strelitzia regina*. The *Victoria regia* house is beautified with *Cyperus*, *Paratropia*, and *Crotons*; also *Solralia macrantha* in a tub 4 feet across. The Orchids are numerous, and flowering well; it is hoped that the Administration will allot a special house for them.

The principal ornaments of the Palmarium are *Kentia Lindenii* and *Luciani*; also *Theophrasta macrophylla*, *Strelitzia Nicolai*, and *Cureuio recurvata*. The Garden celebrates the fortieth anniversary of its foundation this year. The Director is Dr. J. Buttikofer, known for his travels and explorations in Liberia and Bornco; the head gardener is M. J. Wilke.



FIG. 144.—NECTARINE "VICTORIA." (SEE P. 384.)

(Colour of the fruit greenish-yellow, except on the sunny-side, which is crimson.)

brook running along the bottom of it, and the land is retentive of moisture, and in wet weather becomes quite unworkable; indeed, as an arable field, in which condition it had been for many years previously, it had acquired an evil reputation, and before its conversion into a fruit-farm, had been allowed to become very foul.

In addition to its experimental side, the farm is utilised as a nursery where trees are being raised to

recorded at the fruit-farm, so that any application for fruit-trees on behalf of the tenants may be dealt with by an experienced person, already possessed of full knowledge of the requirements of the case, and the trees will be supplied direct from the fruit-farm, and in many cases planted by, or under the supervision of, the manager. In cases where a tenant, whether farmer or cottager, is embarking in fruit-growing for the first time, it is much to his interest, as well as to

The Hague.—The Zoological and Botanic Garden here contains smaller houses than that at Rotterdam, but is well worth a visit. M. Kortman, the head-gardener, is both skilful and successful. I noted among the plants two large specimens of *Cymbidium Lovianum*, measuring 9 feet across and 5 feet in height, each with thirty floral racemes, with at least thirty-two blossoms; they have been in cultivation for twelve years. There are good specimens of *Streitizia regia*, Japan Lilacs with the odour of *Heliotrope*, and *Syringa*, all in the same house. In the Orchid-house were *Ceolognes Messingiana*, with sixty floral racemes; more than thirty plants of *Vandas arca*, tricolor, and *Schilleriana*, imported directly from Japan, flowering well and in good health; fine specimens of *Cypripedium*, *Angraecum sesquipedale*, and one *Vanda tricolor* with four floral racemes united into two clusters of fifty-six flowers. There is a collection of *Caladiums*, including from eighty to ninety varieties. I noticed also a *Ceologne*, with a nice full truss of bloom. At La Haye they have followed the example of Kew Gardens by admitting female workers, one of whom, Mlle. Marie Kortman, I saw sponging the *Gardenias*. *Maxillaria picta*, numerous species and varieties of *Anthurium* and *Streptocarpus Wendlandi* are also grown here. The entrance of one house is gay with *Rhododendrons*, *Azalea mollis*, and Lilacs and *Fuchsia Mrs. Rundler*.

The garden contains a good collection of *Araucarias*, fine Palms, notably *Livingstonia Hoogendorpii*, *Latania borbonica* with fifty, and another specimen with forty leaves. M. Kortman will celebrate, next February, the fiftieth year of his career as a gardener.

Leiden Botanic Garden.—M. H. Witte has for forty-two years had the management of this establishment. I will note a few of the more remarkable plants which I saw. In No. 1 house is a fine example of *Echmea Lindlei*, the tree *Latania rubra*, *Brownea grandiceps*, the very rare *Drymophloeus paradoxus*, *Crinum giganteum*, *Arenca saccharifera*, *Pritchardia pacifica*, with the pots sunk 6 feet into the ground—the latter plant is 26 feet high, and bears fourteen leaves 9 feet long by 6½ feet wide. There were also *Coccoloba guatemalensis*, whose leaves fall in winter to be replaced by beautiful red ones in spring; a good *Coccoloba pubescens*, *Keattia Wendlandi*, *Thrinax parviflora*, *Caryota Cumingii*, *Calamus asperus*, *Cocos nucifera*, *Brownea erecta*, the very rare *Draecena Hookeri latifolia*, which stands out in summer; *Chamodorea Ernesti Augusti*, *Ficus religiosa*, with adventitious roots down to the ground, whence issues a young plant. I would also mention the rare *Monodora gran villosa*, and, before passing on, would note *Chamerops excelsa*, which has been out of doors during four winters, is doing well; and that there is a good *Metrosideros candelabrum* 13 feet high, and a fine specimen of *Muhlenbeckia australis*.

In No. 2 house are *Encyclanthus lauginae* oses, whose trunk appears to be 1000 years old; *Phoenix tennis*, *Latania borbonica* with a trunk 13 feet high, and at least thirty leaves; *Cocos campestris*, *Encyclanthus Vroomi*, *Pritchardia filifera*, *Brahea dolens*, *Chamerops staurocantha*, and *Pritchardia Martiana*.

In No. 3 house are interesting collections of Bromeliads and Orchids, as well as *Strobilanthes bicolor* var. *lobulata* from Buitenzorg; *Carlinodendron latifolia*, very dwarf; *Cochlidostema Jacobianum*, *Pseudanum amarillidifolium*, a very curious hybrid, and *Jambosa domestica*.

Among the Orchids are fine *Angraecum sesquipedale* and *Vanda suavis*, with twenty-one large flowers. I noticed also *Pithecom deipnis*, *Echmea mexicana*, which has been in flower for at least three months; *Chirita hamosa*, flowering abundantly on the petioles of the leaves; and a pretty *Ruellia colorata* from Buitenzorg.

I went through the orangey, an old building which, for the credit of the Hortus Botanicus Academicus Lugduno Batavensis, it is hoped will soon be superseded. It contains large specimens of *Agave, Quedicus ruber, Punica granatum fl.-pl., Arbutus Andrachne, Laurus nobilis*, and other plants, which are set out in summer. The tubs are of Teak-wood,

not painted; this wood seemed indestructible, the tubs being fifteen years old, and still in perfect preservation.

In No. 4 house is *Latania borbonica* in good condition, with from fifty to sixty leaves; *Washingtonia robusta*, *Agave ferax*, *Cereus peruvianus*, showing an interesting example of atavism; and a fine specimen of *Cussonia spicata*.

No. 5 house is not large, but contains a wonderful collection of *Cacti*.

In the arboretum I admired *Fagus sylvatica argenteus*; a large *Ginkgo biloba*, *Pisopapyrus Lotus*, also *Acer pseudoplatanus*, and many other fine trees.

No. 5 is a cool-house, not very large, with Tree Ferns finely grouped round the entrances, and with a rocky set of steps leading to a platform, whence the outlook is very pleasing. I would mention *Fagus asplenifolia*, *Ulmus americana pendula*, and a large *Fagus sylvatica pendula*, which is much admired. The *Victoria regia* house (No. 6) includes *Albizia lophanta*, and a fine *Muhlenbeckia australis*.

The Alpine garden and rockery are very pretty in summer.

In a hot house built entirely of Teak, are some fine Aroids, *Anthurium regale*, numerous *Bomellads*, including collections of *Cryptanthus*, with *C. fuscus* x *Beuckeri*; *Vriesea Minerva*, not in the market, but raised by M. Wendland from *V. princeps* x *V. splendens*; *Vriesea* x *insignis* (*V. Burretii* x *V. splendens*); *V. longibracteata* from Venezuela, *Tillandsia Gaertneri*, *T. bulbosa*, well-grown *Nepenthes*, a fine *Cargueta Morreana*, and *Phanicephorum seychellanum*.

I saw also Mr. H. Willes' photographic room, with an interesting collection of views of the Botanic Garden, and of plants, so complete that it would be possible to exactly copy the garden from them.

The principal horticultural establishment at Leiden is that of M. Graf, *fières, Ch. De Bossche*.

HOME CORRESPONDENCE.

FICUS ELASTICA.—As the fruiting of this plant is not very common, it may interest some of your readers to know that Mr. George Bennett, florist, Ryde, Isle of Wight, has a fifteen-year-old plant, bearing a large number of fruits, which resemble, as one would imagine, very small Figs. Though the plant is fifteen years old, it has never fruited before. No special treatment is given the plant; it has rooted through a pot into a border at the end of a large lean-to house. Mr. Bennett really keeps it as a stock-plant. *S. H.* [Figured in the *Gardener's Chronicle*, 1876, p. 359.]

AN ARTISTIC BLEND.—In passing some pretty residences in Comely Bank, Edinburgh, to-day (May 29), I noticed near a house in which Thomas Carlyle, the great writer and sage of Chelsea lived for two years, a border of Lily of the Valley, and the common Woodruff (*Asperula odorata*), thickly and apparently naturally mixed together. I do not remember to have seen this highly-pleasing and artistic mixture before, wholly green and white, and also both fragrant, but in form, stature, and general characteristics, few plants could be more distinct than Valley Lilies and the fragrant Woodruff. Taking the last characteristic first, the Woodruff has little or no scent when green; but when the leaves and flowers are dry, the odour is much prized, and used to be worn inside watch-cases. They are still prized to place among linen for their unique fragrance, and likewise as antidotes to moths or other insects among clothes and linen. On the other hand, the fresh Valley Lilies are so sweet for bed or border that the addition of Woodruff, or of any other scent, would spoil them through excess. Then the spikes of the Lily of the Valley look their best, resting on or rising through the pure white carpeting of Woodruffs. The form of the leaves, too, is in striking contrast, each enhancing the beauty of the other. The colour of the leaves, too, is almost as different as their form, the Lilies being deep green, glistening, as if varnished in the sunshine, while the leaves of the Woodruff are semi-glossous and glabrous. This pretty blend sets one enquiring why this lovely native plant is not universally grown in gardens. Another British species, *A. cyanaclicum*, is taller and

less beautiful or pure, unless when pure white; the flowers, however, being mostly of a bluish-white, marked with red lines. *A. hirta*, or Hairy Woodruff, *A. longiflora*, *A. montana*, *A. tinctoria*, white, reddish on outside, the tallest of them all, growing to a height of from 1 to 2 feet. But next to *A. odorata*—some would be disposed to place it before it—should be placed *A. orientalis*, which is also grown under the name of *A. azurescens*, or blue bristly Woodruff; the flowers are a sky blue, and this is a charming little, profuse, hardly annual, bearing clusters of fragrant flowers, admirably adapted for bouquet-making or other decorative purposes. This species would make almost a richer blend with Valley Lilies, if sown among the latter in August, under glass in the autumn or early spring, and grown on and planted out say in March or April, to enable them to flower abreast of the Valley Lilies. The sky-blue colour of this fine species, as well as its compact and charming habit, might form a richer contrast, though hardly a purer or more pleasing blend than the sweet-scented common Woodruff and Lily of the Valley. *D. T. F.*

OUTDOOR STRAWBERRIES.—We made our first gathering of outdoor Strawberries to-day (June 5). The varieties were Royal Sovereign and Noble, comparatively speaking, there was little difference between the two in the time of ripening, and I look upon Royal Sovereign now as being quite the equal for earliness to Noble, and shall discard this latter variety. *C. Herwin, D. Opocore*.

KEW GARDENS.—One defect of a railway for the convenience of visitors round Kew Garden is, that the visitor who went by it could see only those parts that it traversed, and the railway, being a somewhat unsightly object, would naturally be kept as much as possible on the outskirts, from which parts the chief beauty of the gardens would not be visible. Would not some bathchairs, or even donkey-carriages, meet all needs, and I be available to go to any object the visitor may wish to see? As to the opening of the gardens earlier, that seems to be a matter for the authorities first, and I do not think anyone can charge upon them that they seek churlishly to exclude the public. Rather, their efforts to make the gardens so beautiful and so attractive leads to the inference that they welcome the public heartily. *A. D.*

BLISTERED PEACH TREES.—In further reference to the Peach-blister that you have kindly called attention to, I find that the aspect the trees are facing is but of little consequence; we have trees in this locality protected by high walls and facing due south, that are so badly attacked that they are nearly dead—also south-west and south-east. The disease attacks the wood and infuses it as well as the leaves. The young shoots that struggle in existence are swollen, and the tops of them turn over. No young spring shoot can grow to be of use for fruit-bearing next year. The disease cannot be produced by cold winds, because my Peaches in pots in the glass-house, which never had a breath of wind on them, were badly attacked. I have therefore come to the conclusion that the disease, whatever it is, gets into the sap of the tree and affects all young growth. Will you kindly tell me whether the sap is constantly circulating through the trees, or merely flows up to the shoots and gets absorbed by them, returning to the roots only in the autumn? This disease, unless checked, threatens to destroy all the Peach and Nectarine trees in South Devon; further assistance therefore will oblige. *C. N. M.* [The juices of plants are in constant motion so long as the conditions are propitious. The notions of a complete up and down circulation are long since obsolete. Dress with the Bordeaux Mixture, recipes for making which have often appeared in our columns. *Ed*]

FAILURE OF WATER-LILIES.—I give the following experience for what it is worth.—Four or five years ago, when living near Sydney, N.S.W., I sank a number of clumps of *Nymphaea lutea* and alba in a large pond of varying depth, where half-a-dozen ducks were kept; only the one sunk in the deepest parts grew. I thought I saw a clue to the mischief, I abolished the ducks, and sank a few more clumps in the shallow parts; and in a few months the growth of the plants covered more than 1000 superficial feet. It was there we were galore, both before and afterwards. *C. B. Havant*.

DRACÆNA LINDEMI.—The flowering of this plant possesses some interest in its rapid growth in putting up a strong spike 18 inches long, the thickness of one's little finger, and throwing off of side shoots 3 inches long with a globular ball of flowers, the size

and shape of that of *Echinops* *Rho*. The individual flowers kept expanding for a week, and opening nearly at the same time each day, 3.30 P.M., and giving off a most delicious aroma. These flowers shrivel before the morning, and all traces of the aroma vanish till fresh ones expand the next day. Its congener, *D. fragrans*, I have not grown; but it would be hard to excel the above in beauty and fragrance. The flowering of various plants, especially such as have fragrant flowers, leaves a lasting impression. I look back a little lifetime when at the home of my youth I watched the expanding petals of the Victoria Regia, and its grateful fragrance penetrating the air for a long distance from the plant; and I have the same recollections of *Cereus grandiflorus* (Queen of the Night), and of many other plants, hardy or semi-hardy, and others of great beauty, as, for instance, *Aubersteria nobilis*, &c. *Geo. Dolan*.

BULB DEFOLIATION IN THE REGENT'S PARK.—Some time since I had an opportunity of seeing some of the Tulips and Hyacinths being lifted from the beds in the Regent's Park, and in the bulb-room I also saw how they were stored away to finish their ripening, as stated by Mr. Earley. I may mention that in the case of all the bulbs grown in beds, the flower-stems are cut away as soon as faded; a few days after they are dug up and taken in wheelbarrows to the bulb-room—which is on the same principle as a modern fruit-room, only instead of fixed shelves there are light wooden trays, open at the sides, to admit of a free circulation of air. A layer of very fine ashes in the form of dust, as dry as it can possibly be, is laid in the bottom, then the foliage of each bulb, whatever it may be, is cut away, leaving from 2 to 4 inches of stem; the bulbs are then laid close together in a single layer, without any soil adhering to their roots, and the bulbs, but not the stems, covered with fine ashes; the trays are then put back, and there they remain until late summer, when they are looked over, cleaned, and sorted for planting. The strongest are planted in the park beds for flowering in the following spring; the offsets are planted in nursery beds, of which there are many, in an enclosed piece of ground near the Regent's Park College. Here they remain for a year or two until they have grown into size, and large enough to occupy beds in the Park garden. Mr. Jordan contends that there is vital force enough in the bulbs, and in the moisture they convey to the ashes about them, to properly mature them and prepare them for another season's bloom. The proof of this is seen in the magnificent heads of Hyacinths, Tulips, Daffodils, &c. Mr. Jordan is able to produce from bulbs so treated. If by doing so he appears to run counter to some prevailing notions as to the action of the foliage in producing perfect maturation of the bulbs, he can with justifiable pride point to results and say—here are the proofs of the fitness of the course I adopt. I may say, that when the bulb-room is closed it is nearly dark; also that there is a space of 6 inches clear between a tray of bulbs and the one above it. *R. Down, Ealing, W.*

REDUCING THE HEIGHT OF TALL TREE FERNS.—To those readers of the *Gardener's Chronicle* who have Ferns that have grown too tall, a few notes on the apparent success of the following experiment may be of interest. Our plant, *Cyathea medullaris*, was about 20 feet high to the crown, and it being inconveniently high, we desired to root it off in much the same manner as *Crotons* and *Dracenas* are done. A stand 7 feet high was erected round the stem, upon which a box 18 inches deep by 25 inches wide was built and filled with sandy soil. At the same time a notch was made in the stem under the box to induce the formation of roots. As the roots gradually permeated the box, the notch was deepened from time to time, until the stem was sawn through as nearly as possible without the head toppling over. I must not omit to mention that the stem above the box was also mossed and kept moist. The Fern was lashed at the end of January last, and as it has now pushed up eight young fronds for a considerable distance, I think we may assume that it is likely to succeed. *James Baxter, Eddie Grange Gardens, Lymington.*

DAMAGE FROM HAIL.—I am sending a few *Nectarine* fruits to show the damage done by hail on Sunday evening, the 30th ult. The fruits were brought me by Mr. Morris, of Oakwood Gardens, where the trees are fortunately so heavily cropped that the damaged fruits have been removed there will be sufficient left. The hailstones were unusually large; in fact, a snowball flattened one was measured in my presence, and it was 1½ inch across. The

storm was of short duration and unaccompanied by strong wind, otherwise more serious effects would have resulted. In the Hop gardens many of the points of the bines, 4 and 5 feet high, were cut off, young shoots of fruit-trees damaged, and early Pears disfigured. *H. Markham, Maidstone.*

THE FUCHSIA AS A BEDDING-PLANT.—Nothing is more suitable as a bedding-plant than the *Fuchsia*, whether used as a dot-plant pyramidally trained, or as standards in the geometrical flower-garden, or *en masse* in a detached bed. Several of the species are hardy in the southern and western counties; and near the sea-coast, where they frequently escape being cut down for years, and I have seen instances of the wood having assumed the proportions of a tree, but if an unusually severe season occurs, they are killed to the ground. The following eight varieties are worthy of cultivation, and more or less hardy, *F. coccinea*, *gracilis*, *Riccartoni*, *Portunei*, *Sieboldi*, *globosa*, *corallina*, and *discolor*. Many other varieties, however, may be depended upon to make a uniform growth which is most essential when planted in beds. One of the best I have mentioned was in Madame Cornelli's, a good companion to this being *Lye's Own* or *Mrs. Marshall*. The *Fuchsia* thrives best on a light open soil, where the wood will ripen early in the season. To insure having good strong hard plants by bedding-out time, the plants should be induced to break into growth early in the season, care being taken that they do not remain in heat a day longer than is necessary to obtain a uniform break; then gradually harden them, and finally place in a sheltered spot in the open air. The application to old plants which have been kept over for years to year. Cuttings are best struck in the autumn, as when the plants are well rooted, they may be potted into small pots, and kept gently growing on a shelf near the roof-glass in a temperate-house all the winter. In February they should be moved into a size-larger pot, giving them a position afterwards in a warm, moist atmosphere, until the roots have permeated the new soil, then gradually harden them off. As a single row or hedge on grass, or as a background to some other object, the *Fuchsia* is very beautiful; but it is as pyramidal, or as plants with tall stems, that the full beauty of *Fuchsias* in the open air is best seen. *H. P. M., Stoneleigh.*

FLOWER GARDENING IN THE REGENT'S PARK.—In addition to the spring-flowering bulbous plants Mr. Jordan uses with such fine effects, other subjects of a varied character are employed as carpet plants and various other ways. Carpet plants used in spring beds should flower at the same time as the bulbs, and this characteristic is secured in the useful *Rock Cross*, *Arabis albidia*, and various double tulips of foliage and bloom abundantly. The double *Primrose*, *Platystemon* plena, formed a carpet in one bed, but it seemed to be too near the soil to be effective. *Primula Sieboldi* is largely used as a carpet on some of the raised beds, with groups of *Daffodils* rising up from among it; it is now at its best. When the bloom is over and the foliage begins to turn yellow, the plants are lifted and planted in beds in the nursery, and on the approach of winter a good mulch of manure is applied to the surface. When the creeping rhizomes appear to be becoming active in spring, clumps are lifted and planted-out for the spring display. The species, which is the only one at present employed in the Park, is thus wintered in the open without anything like protection. The plants are put out at the end of March. Carnations are very largely employed for the summer display, and they are all raised from layers. Having been wintered in frames, they have recently been planted out in well-prepared raised nursery beds, preparatory to being transplanted for use in the summer effects. A large number is set aside for this purpose, raised considerably above the garden paths, in which has been dug a good deal of road refuse. At the time of planting-out on this border, a mixture of sand, lime, and soot is forked into the surface, and in this the plants do remarkably well. The *Viola* is another subject largely employed by Mr. Jordan in his summer display. Lately I had thousands of rooted cuttings in cold frames, cuttings put into sandy soil in the autumn. The leading varieties are *Bullion*, undoubtedly the earliest *Viola*, with its golden blossoms; *Blissina*, an old variety bearing this name; *J. B. Hilding*, Countess of Kintore, *Griest*, *Sybil*, *William Nix*, *Blue Gown*, *Archie*, *Arden*, *Blue Bell*, &c. Mr. Jordan does not mind some of them being of tall and straggling growth, so long as the colours are suitable, as in association with other plants they take on a kind of

climbing habit of growth, filling out the base of an associated bed, and yet blooming freely. A large frame was full of good-sized, shrubby plants of *Hydratage hortensis*. They are now developing their buds, and are intended for use in some conspicuous position. These are but a few of the leading subjects turned out of this nursery. There is a huge house of very fine specimens of foliage plants, *Palms*, *Tern-Ferns*, &c. *Cannas* in abundance, especially a striking dark-leaved variety; *Marguerites*, *Fuchsias*, *Polygoniums*, *Nicotiana affinis* in large numbers, *Saxifragas* and *Sedums*, &c., and the charming pyramidal *Gelodias*, which were so striking last year, are being brought on in the form of young plants to take their place in the season's arrangements. *H. D.*

SOCIETIES.

THE AGRICULTURAL SEED TRADE ASSOCIATION.

The members of the above association dined at the Holborn Restaurant on Monday evening, May 31, N. N. SHERWOOD, Esq. in the chair.

The chairman in giving the toast of the evening "The continued success of the Agricultural Seed Trade Association," said that it was founded seventeen years ago, its chief object being to regulate, as far as possible, the dealings on Mark Lane in reference to Clover and other agricultural seeds; and more especially to effect the settlements of disputes that might possibly arise, as it is quite impossible to expect in carrying on such large dealings as are daily conducted by the Seed and Trade Association, that there should be any serious rise. The object of the association is to settle these by arbitration without the expenses of the law. He thought it spoke well for the working of the association, that year by year disputes were of rarer occurrence, and that those that do occur are settled amicably to all concerned.

Mr. ANSLEY Moss proposed "The Visitors," coupled with the name of Mr. Thomas Mackenzie of New Zealand. Mr. Mackenzie, in reply, thanked the proposer of the toast, had seen an Association's influence extended a few years ago to New Zealand, it would have saved a trying law-suit connected with the seed-house in which he was interested, which could have been settled for £50; whereas, by taking it to court, it cost about £450. He had been pleased at Mr. Le May's remarks regarding British agriculture, but it appeared to him (Mr. Mackenzie) that Mr. Le May had overlooked one of the most important, namely, the dairy industry, for which this country was so famous. The strikes made in this department in New Zealand were astonishing, and their output excellent. England could easily secure that portion of her trade at present absorbed by Denmark. He regretted to see in some spirit of antagonism towards the products of the younger nations of the Empire. At times they were called "foreign," surely it was dispiriting to say an article was "foreign" simply because it was received from a distant part of the same empire. We were kith and kin, spoke the same language, held true to the same traditions, obeyed the same laws, were loyal to the same old flag. During Queen Victoria's reign the trade of Australia and New Zealand had risen from a few millions to one of £100,000,000, the total trade of Great Britain and India combined was in 1857.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

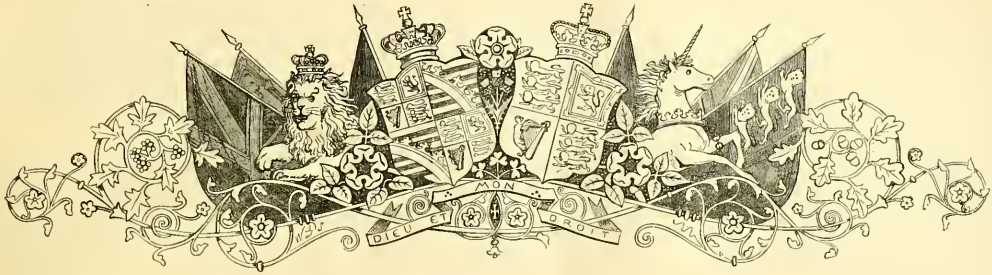
JUNE 3.—Coming so close upon the Royal Botanic Society, the Committee did not expect so many contributions nor any of a very choice character. In very fact, however, several exceeded the previous meeting, and the number of the Committee was no sincere. There has been some remodeling of the Committee; and as now constituted, Mr. Thompson, Walton Grange, is Chairman; G. Shorland Ball, Ashford, Vice-Chairman; E. J. Hiebotham, Erisicue, Bowdon, Cheshire, Hon. Treasurer; W. A. Gent, 41, Faulkner Street, Manchester, Hon. Sec., with other 14 members, leaving a vacancy for 5 to complete the full number of 20 for the constitution. The following plants received First-class Certificates: *Cattleya Mossii*, *Rapiparrisia*, from D. H. RAPEART, noticed elsewhere; *Sobralia macrantha*, from Mr. A. F. SANDER & CO., St. Albans, a beautiful white flower of good substance; *Dendrobium Parsonsii*, from our Captain S. METCAL, Rawltonhall, this was an extra fine form of pronounced substance, but there is likely to be more of this from recent importation; *Dendrobium Lowe*, from W. G. GAVES, Alderley Edge (ex. Mr. Robertsshaw); this is the best known piece of this difficult-to-grow subject we have seen, and it well deserved the Award, as it is the most vigorous of all the yellowish species of the nigro-hercule section. He also sent *Miltonia spectabilis* radiata, Grove's var., which was similarly distinguished. There was some demur as to this award, because the plant from which the spike was taken was not present. It is from the base of the flower in which the lip is decorated with white blotches and spots, and in the lobes are crowds of small spots. An Award of Merit was made to this grower for a beautifully flowered plant, and extra flowers too of *Dendrobium Falconeri*,



FIG. 145.—A VIEW IN THE MANCHESTER ROYAL BOTANIC GARDEN. (SEE P. 390.)



FIG. 146.—"ANNEXE" IN THE MANCHESTER ROYAL BOTANIC GARDEN. (SEE P. 390.)



THE

Gardeners' Chronicle.

SATURDAY, JUNE 19, 1897.

WINDSOR.

IN our issue for October 31, 1874, we published, in the form of a fully-illustrated supplement, a pretty full account of the Royal Parks and Gardens at Windsor; and much of what was then published is applicable to the present condition of the royal demesne, so comparatively slight have been the changes which time has wrought in the interval. We may repeat here the opening paragraph of the account then given:—"If, in the matter of royal palaces in general, we have not much to boast of, we have one which, in beauty of position, dignity of aspect, appropriateness of surroundings, and fulness of associations, extorts from us reluctant lips the opinion that Windsor is a residence worthy the Sovereign of so great a nation,

"Worthy the owner, and the owner it."

Like all our great institutions—like human life itself—the history of Windsor presents great contrasts; now a palace, and now a prison—at one time the place where the Norman monarchs kept their Whitsun and Christmases, where in the first three Edward's days great tournaments and revels were held, where Elizabeth kept festival, where Henry VIII., Charles II., James II., Dutch William, Anne, the Georges, and especially George III., passed much of their time, and where, in our own time, much that will be historic has taken place. On the other hand, it has its gloomy memories: here prisoners were "miserably furnished to death;" here John was almost, if not quite, a prisoner till he signed Magna Charta at Runnymede hard by. The French King John, about a century and a half later, was a prisoner here after the fortune of war at Poitiers had led him to surrender to the Black Prince and his father, the third Edward. Here the unhappy James I. of Scotland was imprisoned early in the fifteenth century. Here two centuries later Charles I., another of the same ill-fated family, was for a time imprisoned, and in 1648 passed his last Christmas; and here another woeful Christmastide, within our own times, was marked by a Queen's anguish and a nation's sorrow.

THE TERRACE GARDEN.

This consists of a parterre of three to four acres in extent, and constructed in 1824. It is 12 to 15 feet below the level of the terrace, and is partly encircled by an orangery, now chiefly

devoted to the storing of tender bedding plants in the winter, and where they succeed without any artificial heat being employed. The flat roof of this house forms part of a walk. A feature of this garden consists of pyramidal evergreen shrubs, chiefly Hollies in variety, Golden Thuias, which range in height from 3 to 10 feet, and form a background and foil to the gay occupants of the beds. Both spring and summer bedding are carried out, and for the latter about 50,000 Pelargoniums in variety are employed, besides large numbers of other plants.

The view from the terrace in all directions is very beautiful. In connection with the castle it may here be mentioned on the authority of Messrs. Tighe & Davis, that as late as the reign of George III. a small vineyard existed on the outside of the south wall of the lower ward of the castle. The ground slopes from the castle-walls on one side down to the Thames, and on the other towards the Home Park. Hereabouts are the slopes, abundantly wooded, and abounding with wild plants and ordinary kinds of shrubs, Portugal Laurel, Bex, and exhibiting but little ornate planting of exotics, and withal deliciously restful for its freedom from garish colours. The trees consist of Oak and other indigenous species, the Gean, or wild Cherry, attaining to a large size.

At the top of the slopes, and adjacent to the castle-wall, is a fair specimen of the Cedar of Lebanon, planted by the Prince Consort a day or two after his marriage. The Queen's favourite collie lies buried beneath the shade of its branches; and close by may be seen a fine Paulownia in full bloom, and one of the largest specimens of *Köbrentraia paniculata* in the country, which in spring offers a sheet of golden yellow colour.

At a point just below the terrace, and on each side of the road leading to it, an avenue of jubilee trees, fifty in number, will commence. These trees will consist of specimens of *Cedrus atlantica glauca*, prepared for the purpose by Messrs. Veitch & Sons.

Some distance down the slope is a rockery with a cascade, well adapted for the cultivation of the choicest Alpines, but which now contains few rare plants. An elegant, and apparently now seldom used summer-house stands hereabouts; and from a pebble-lined grotto situated on the upper side of the rockery a good view of the latter is obtained. A sharp descent led us from the slopes to the level of the park, noting on the way a stately Oak girdling some 36 feet at 4 feet from the ground, a noble Elm of first magnitude, and the substitute for Herne's Oak deceased; and a short drive over well-kept gravel roads brought us to the orchards and gardens of—

FRONCIRE.

The old orchard consists of trees planted

probably about 1824, and consequently they are not very productive, and of young ones planted between them by Mr. Owen Thomas, the present head gardener. The new orchard, planted in November, 1892, consists of 600 standard trees, standing at 24 feet by 15 feet apart, the culinary being two-thirds, and dessert varieties one-third of the total number. All of these young trees, having been planted with the utmost care, are making good, but not excessive growth, and they will, in the course of a few years, come into bearing. In the neighbourhood of the orchards there are some fine trees of *Sequoia (Wellingtonia) gigantea*, a species which makes strong, healthy growth on the stiff soil. Most of those observed are either grafts or cuttings taken from the fine specimen which forms a prominent object in the park near to the castle.

THE FORCING-HOUSES.

These are somewhat old-fashioned, roomy structures, arranged in groups and ranges, and well adapted generally to the uses to which they are put.

It is worth noting the manner in which the ground on the south side of the ranges of glass-houses, wherever it could be conveniently done, is sown with Chelsea Gem or other early variety of Peas, and how extremely prolific of pods the plants are in these positions.

The first viney we entered contained Black Hamburg Vines, carrying a regular crop of even-sized bunches, fit for consumption during the present week. The berries were of average size, of capital colour, and the bunches compact. Another viney, which is 40 feet in length, was filled with the canes of one Vine only—a Foster's Seedling, the stem of which passes along the back wall near the top, and sends down rods to the front of the viney. The crop here was a good one, and the bunches excellent in size and appearance. Close by is a viney from which fruit is being cut for the royal table; the bunches were of serviceable size. A viney was visited in which a row of young Vines are growing in a high brick bed constructed in the middle of the house, these Vines being intended for fruiting early in 1898; other Vines being planted in the front of the house to form the permanent occupants, and whose roots are in the outside and inside borders. Both lots of Vines are doing well. Excellent Madresfield Court and Duke of Buccleuch Grapes will likewise be fit for the table in the present week. The Vines which will furnish the fruit occupy a viney to themselves.

A Muscat viney of old-fashioned construction, as was shown by the front lights of 7 feet in height, contained a well-cropped lot of Vines in perfect health. There are several late

vineries of great dimensions, in which the bunches were being thinned, and the crops seemed to be more than ordinarily heavy.

As may be imagined, houses for the cultivation of the Peach and Nectarine are many, and the trees in some of them were already denuded of their crops. What is called the second house contained four large fan-trained Elruge Nectarines and three Bellegarde Peaches; and doubtless there are other houses in which are to be found successional trees, both Nectarines and Peaches.

Musa Cavendishi is regularly forced for the production of fruit, a house being set apart for its cultivation. Two lines of plants occupied a bed in the middle of the house, stocky, vigorous examples; and it is Mr. Thomas' practice to take a bunch of fruit from the parent-plant, and another from a selected number of the first crop of suckers. The bed is then cleared wholly or in part, and replanted.

Of Melon-houses there are several, and it was remarked that the variety Frogmore Orange, and a seedling not yet rejoicing in a name, are the favourites this year. Behind one of these Melon-houses we found a house filled with a useful lot of Ferns.

As is well known, the cultivation of the Pine-apple has never declined at the Royal Gardens, and the fruits obtained now are as good as they have always been.

We were allowed to peep into a pit filled with examples of "The Queen" rapidly approaching ripeness. There were other pits filled with fine plants of Royal Sovereign Strawberry, which will continue to give ripe fruits throughout the present month. It was remarked that that old variety of French Bean, Osborne's Forcing, is the one grown under glass, it being an excellent producer of low stature.

THE PALM-HOUSE.

The Palm-house—the subject of the supplementary illustration (fig. 154)—is one into which a carriage and pair can be easily driven, and in which, in point of fact, Mr. Thomas has the vans brought for the purpose of loading them with plants for the decoration of the castle when outside conditions are unfavourable. *Musa paradisica*, which fruits well, and is much liked at the castle, fills the beds at the sides of the stone paths, and *Dracenas*, *Pandanus*, and *Caladiums*, fill the intervening spaces, whilst *Selaginella denticulata* forms an agreeable border to the beds.

THE CONSERVATORY.

or flower-house, is a building of considerable length, with high side-lights, furnished with a wide bed in the centre, in which are large plants of the *Camellia*, and with a narrow bench on the sunny side. Among creeping plants for adorning pillars and wall-spaces *Coclea scandens variegata* is commonly employed, and we noted also the old-fashioned pretty *Rhodochiton volubile*. The bench was gay with *Pelargoniums* of the French spotted type, zonals, *Schizanthus* in variety, *Hydrangeas*, *Primula japonica*, *Ericas*, and a number of seedling varieties of *Cineraria cruenta* which had an uncommonly gay appearance, and were as genuinely pleasing to behold as the more brilliant and large-flowered florist's strain.

From the conservatory the visitor enters the Orchid-house, which is not, however, entirely given up to Orchids, as besides *Cypripediums*, of which *Lawrenceanum*, and var. *nixium*, and *Lælia purpurata* in many examples, were in bloom, there were numerous plants of *Anthurium Scherzerianum* with spathes, bright-looking *Caladiums*, *Tuberose*s in flower, and a

miscellaneous collection of *Cattleyas* and *Lælias*, &c., whose flowering was past. The Cape *Pelargonium* in show, decorative, and spotted varieties, receive much attention, these plants being extremely useful in indoors decoration, of which there is an enormous amount to be done at times. Of the decorative type, a variety named *La Volupté*, a semi-double pure white flower, was much in evidence, as were likewise in the same span-roofed house *Lilium longiflorum* variety, and the white-flowered *Hydrangea* Dr. Hogg.

Another house was filled with *Caladiums* of a useful size, with plants of *Gardenia floribunda* filling a bench at the back of the house. Plants of *Bougainvillea speciosa* and *Stephanotis* partially clothed the roof and the back wall. In

one, and were slightly shaded overhead by the growths of *Niphetos* and *Celine* Forestier *Roses*. The beautiful *Cassia corymbosa* loaded with its orange-coloured sprays of flowers, and a plant of *Bougainvillea*, occupied places on the back wall. Numerous plants of *Clivia miniata* in variety were making growth here.

KITCHEN GARDENS.

This most important adjunct to the royal residence covers in all about 50 acres, a large portion being enclosed within walls 12 feet high. Having so large an area to deal with, the gardener finds the plough and harrow and the horse-hoe more economical implements than the spade, rake, and hand-hoe to employ in breaking up and tilling the land.



FIG. 147.—KEW PALACE, IN THE ROYAL GARDENS, KEW.
(Photographed for the *Gardener's Chronicle* by J. Gregory. See p. 305.)

a stove we came across an enormous plant of the Dove Orchid, *Peristeria elata*, the butts of whose flower-stems measured three-quarters of an inch in diameter, a good indication of what their strength had been. Some choice species of Palms were found here, namely, *Licuala grandis*, a *Demonorops*, some capital *Marantas*, *Dieffenbachia Bausei*, several *Nepenthes* with pitchers, viz., *Curtisii*, *mixta*, *Dicksoniana*, *Amesiana*, *Hookeriana*, *Mastersiana*, &c.

Besides these fine subjects there was the usual assortment of tropical foliage plants. The now popular *Canna* occupied a small house, and was represented by a number of the newer continental varieties.

The collection of foliage plants overflows into still another house, and here were the *Colletiums* (*Crotons*), *Pandanus*, *Dracenas*, *Acalyphas*, *Ixoras*, and other showy plants. Examples of *Lilium speciosum* were being forced into bloom in a house adjoining the last

The various successional sowings and plantings are upon a colossal scale, the requirements of several Royal palaces having to be furnished from the Frogmore Gardens.

Every kind of crop had a thrifty look, betokening careful culture; and cleanliness prevailed in every part of the gardens.

The fruit-trees on the walls are very numerous, Cherries, Plums and Pears predominating; and almost every kind of fruit has to conform to the fan-system of training, which is carried out most carefully and accurately. Few old trees were observed on the walls, these being removed on the first signs of decline of vigour.

In spite of the complaints from all parts of the country of the total or partial loss of the fruit crop, and of damage done to early Potatoes, &c., there was not much evidence that any considerable injury had been experienced at Frogmore—on the contrary, the look of the

Potatoes left nothing to be desired; and the crops of Strawberries, Cherries, Pears and Plums, were generally satisfactory. The gardens are in excellent keeping, and Mr. Thomas, to whom we are under great obligations, is evidently the right man in the right place.

KEW PALACE.

TO the right of the main walk, going towards the Palm-house from the entrance, is the pictorial red-brick Jacobean mansion known as Kew Palace (fig. 147, p. 394). Its history, so far as it is known, is summarised by Mr. W. T. Thiselton Dyer, the present Director, in the *Kew Bulletin*, No. 60, December, 1891. It is said to have been leased to Queen Caroline in the reign of

KENSINGTON PALACE.

WITH rows of straight windows and severe architectural lines, this is a characteristically Dutch building (fig. 148). It is at the western end of Kensington Gardens. In this palace, on May 24, 1819, Her Majesty was born, and here she passed much of her childhood, tending the flowers in the garden as we are told, a circumstance that would seem to indicate a much smaller and less intrusive a population than the present. For a short time the Duke of Kent rented a mansion at Ealing, and loyal residents of that suburb have designated one of the roads as "Queen's walk;" but, if the records are true, the Queen's walking must have been effected vicariously in the arms of her nurse, for the Duke died when his child

bedding plants, and other decorative plants used for the embellishment of the park. Three large span-roofed houses contain a selection of fine plants of Palms, Tree-Ferns, *Musa Ensete*, and similar plants, which will soon be placed in position. A few fine standard Bays in tubs are here harmonising with the architectural features of the palace, and with a large red-brick orangery used to shelter Agaves and other plants. The view from the front of the palace, looking eastward, is just now, considering its situation, magnificent. Noble avenues of verdure radiate in different directions from the Round Pond, and now that the trees are in full foliage, you may look and look again, and not see a house. Close by is the Flower Walk, where John Leech represented a youngster innocently asking, with reference



FIG. 148.—A VIEW OF KENSINGTON PALACE, THE BIRTHPLACE OF QUEEN VICTORIA, AND HER RESIDENCE TILL HER ACCESSION.

(Photographed by Messrs. Stiles, Kensington.)

George II., and subsequently the freehold was purchased by, or for, Queen Charlotte. George IV. was educated here, under the superintendence of Dr. Markham, afterwards Archbishop of York; and the Royal Family resided here till the death of George III. in 1820. Its connection with this present year of rejoicing lies in the fact that the marriage of the Duke of Kent to Princess Victoria of Saxe Coburg took place in Queen Charlotte's drawing-room on July 11, 1805. The Duke and Duchess after the wedding proceeded to Claremont. The Duke of Clarence, afterwards William IV., was also married here; and Queen Charlotte herself died here on November 17 of the same year.

At present the Palace is untenanted, though there are many purposes to which it might advantageously be applied. In any case, it forms a very pictorial adjunct to the Royal Gardens.

was less than a year old, so that the education of the Princess was carried on under the supervision of the Duchess of Kent, the sister of Leopold, the first King of the Belgians. At Kensington Palace early one summer morning, as every one has been told, the Princess was made aware of her accession to the throne. What she said, and what she did, is it not recorded in every newspaper in the land!

Gardening is carried out only on a small scale in the vicinity of the palace, ordinary lawns, shrubberies, and flower-beds encircling the building. But here is placed a statue of Her Majesty, executed by H.R.H. the Marchioness of Lorne, and placed in its present position "to commemorate fifty years of her reign." The Queen is represented as seated, crowned, and in her robes. Close by the palace are the houses and pits, wherein are grown the

to a small plant of *Koelerteria paniculata*, why so small a plant had so long a name! The Flower Walk close by, a favourite resort in times gone by, still retains much of its beauty, though possibly not up to the standard of former times—or is it we that have changed? At any rate, there it is—a delightful bit of gardening as it is, backed up by trees and shrubs, such as weeping Beech, pyramidal Oak, cut-leaved Limes, Lincombe Oaks, and many rarely met with now-a-days, and with bold masses of perennials in front, making a fine display. To give a list of those now in bloom would be to write a catalogue. Let us rather recommend the reader to lose no time in visiting Kensington Gardens before the freshness of the foliage is dimmed, stroll through the flower-walk, and continuing his walk, feast his eyes on the brilliant show of Rhododendrons made by Mr. Anthony Waterer.

BUCKINGHAM PALACE GARDENS.

(BY SPECIAL PERMISSION OF HER MAJESTY.)

NEW Londoners have been privileged to visit these Gardens, unless, it may be, when the Queen receives her visitors on the lawn at a garden-party or other state-function, and few are aware of the scenes of sylvan beauty concealed behind the somewhat gloomy-looking walls. Extending from the garden-front of the Palace on the east to Grosvenor Place on the west, and from Constitution Hill on the north to Buckingham Palace Road on the south, is an enclosure begirt for most of its length by a high brick wall. Raised mounds and groups of trees are disposed along the boundaries, and ensure seclusion from all but the upper stories of a few houses in Grosvenor Place.

The situation is low—its surface is naturally nearly level; the soil clay. Practically it is continuous with St. James' and the Green Parks, whilst the width of the roadway at Hyde Park Corner alone divides it from Hyde Park itself. A more central locality for the residence of the Sovereign could thus hardly have been selected, and one less encumbered by buildings and obtrusive structures. As a royal residence, it does not long antedate the reign of Her Majesty, for the Palace, previously the property of the Duke of Buckingham, was purchased by George III., and remodelled by Nash in 1825, at the command of George IV.

The area uncovered by buildings is about 40 acres, of which the lake comprises 8. The rest is undulating greensward, with groups of trees, shrubberies, and a few flower-beds. So judiciously has the surface been laid out that the boundaries are concealed, and the destination of the paths is not seen till they approach their termination. The space, therefore, seems much larger than it really is. In leafy June the visitor might easily imagine himself in some noble park far removed from the great city, were it not that the low roar of the London streets is continuous day and night. Nothing stops that; whilst, in the winter time, fog and smoke beyond the average invade even the precincts of Royalty, and tax the skill of the gardener even to keep the leaves on his Pelargoniums. Some fine Beeches, Elms, Hornbeams, Hollies, Ashes, Turkey Oaks, Copper Beeches constitute the staple of the trees, intermingled with Lilacs and Laburnums. Conifers naturally do not thrive in a London atmosphere, but here is an exception in the case of the deciduous Cypress, *Taxodium distichum*, whose feathery foliage gives character to the surrounding vegetation. A small Cedar of Lebanon, too, impresses its distinct outlines to advantage among the billowy heads of the Elms.

Rhododendrons and Azaleas brighten the scene in early summer, and a few flower-beds give colour later on. For bedding purposes, Mr. Stirling, the gardener, depends largely upon Fuchsias and bright-hued feathery *Celosias*. *Violas* and Ivy-leaved *Pelargoniums* contribute their share to the adornment of the beds. Many of the glades and shrubberies seem well adapted for the introduction of Irises, *Paeonies*, and other herbaceous plants, which do well in the adjacent parks; whilst *Daffodils* and *Blue Bells* might add an additional charm in spring. But we are "reckoning without our host." The lordly peacocks are neither few, nor are they considerate. They claim, or at least they take, equal rights with the gardener. Bare patches on the slopes and on the lawns, and wholesale destruc-

tion even of Ivy, give one an idea of the appetites of these gaily-bedizen'd fowl, and of the difficulties with which the gardener has to contend. In spite of these veritable mar-plot, the turf is as delightful to the eye as it is restful to the foot; and the sinuous lake, and its branches embowered in trees, constitute a scene of beauty that could hardly have been anticipated in the centre of a mighty city. How gay the scene will be in the forthcoming festivities may be imagined from the accompanying newspaper paragraph:—

"The Queen's Barge-master, and eight Queen's watermen, have received instructions to attend the Jubilee festivities at Buckingham Palace from Sunday the 20th to Monday 28th inst. At the garden party on the latter date, extra watermen and craft will be requisitioned."

One of our photographs (see supplementary illustrations) was taken from the top of a steep mound, which hides out the mews. Its summit is crowned by an elegant pavilion decorated in the interior with frescoed panels by Landseer and other artists. From the terrace in front of this summer-house, we look down upon a point where the lake forks into two divisions. The haze in the background—we fear, dust and smoke in reality—suggests limitless distance, an effect enhanced by the concealment of the boundaries and the graduated outlines and shadows of the trees in the foreground and middle distances. The view suggests, on a small scale, that from the terrace at Richmond.

An architectural conservatory of stone, on the north side of the palace, closely resembles the Aroid-house at Kew, which, indeed, originally occupied a position in these gardens. It is filled with tall Palms, *Kentias*, *Seaforthias*, and the like for decorative purposes; whilst the side-stages, like the pillars supporting the roof, are clothed with zonal *Pelargoniums*, forming a blaze of colour at the time of our visit.

At one corner of the ground is Mr. Stirling's house, and a few span-roofed houses full of small Palms for decorative work, and pits adjoining for the culture of the *Celosias*, *Fuchsias*, and plants used for bedding. Some of the pits contain an excellent collection of *Caladiums*, whilst amongst the *Dracenas* one called Lord Wolseley is found to be specially useful for its powers of endurance. *Azalea amœna* is also grown in some quantities, and is very effective in spring.

One curious circumstance was pointed out to us as we were leaving the ground, and that was that the Ivy refuses to produce clinging roots and to attach itself to the old brick walls without the aid of nails. How this is to be accounted for we do not know, for in other parts of the town with an atmosphere more filled with impurities than it is in Grosvenor Place, we have seen Ivies of many kinds clinging to the old brick walls without artificial aid.

A door in a wall is opened, we heartily thank our conductor, and we pass from the reposeful beauty of the royal pleasure-ground into the hurry and turmoil of a busy London street.

OSBORNE.

VERY different in character to the large and historic establishments of Windsor Castle and Buckingham Palace is the Queen's residence near Cowes. There is here the quiet restfulness that go to make many country residences enjoyable retreats, and it is possible for Her Majesty to dispense with many ceremonies and formalities that attend her life at

either of the other places mentioned. Indeed, the visitor soon feels that Osborne is in many respects what one might expect Her Majesty's private residence to be.

Osborne lying on the northern side of the Island, is very much less favourably situated from a gardener's point of view than Ventnor or Shanklin, which are sheltered from the north by high cliffs.

From East Cowes the distance to the entrance to the Osborne estate is but small, though the good-humoured, importunate drivers of conveyances, when soliciting the patronage of a visitor, never fail to describe it as "at least a mile and a half." There are numerous entrances in this locality, and several of them seem to indicate Royal Osborne. The estate, which includes a model home-farm, stretches many miles, and the distance from Cowes nearly to Ryde may be traversed by the shore without leaving the estate, which contains as many as twenty-five miles of drives and walks, and two thousand acres of land.

The mansion, built after the Italian style, has two towers, and on the south-east side is the lately-added wing, containing the sumptuously-furnished Indian rooms. The ground slopes considerably down to the Solent north of the house; and though the pleasure-grounds and estate are generally well sheltered on other sides, there is much exposure to the bleak sea-winds from the north, which were so cutting at the time of our visit as to cause us surprise that many tender shrubs withstood such exposure so well. The climatal conditions of a garden at Cowes are indeed different to those of another at Ventnor, though but about a dozen miles distant.

The view that may be had from the top of the house, and which stretches over Osborne Bay, is a charming one indeed. Immediately below the house upon this side is a grand terrace, and some smaller ones interesting to the gardener, because the beds contain plants that in the northern parts of this country are known only as greenhouse plants, and upon the walls of the terraces are plants of the same character. Among the latter, none is used more commonly and does better than the Myrtle, several varieties of which are noticed again and again. *Yuccas* have been planted in numerous cases in miniature beds, and upon the grass, where they grow and flower well. Several other features upon the north side were interesting to us, one of which is a gigantic specimen of the Chinese Palm, *Trachycarpus* (*Chamærops*) *Fortunei* (see fig. 156), possessing a clean, handsome stem for upwards of 20 feet, and above this a good foliated top. A special tent is built over this each autumn to protect it from possible injury during winter. Then there are beds of fine *Camellias* here also, which flourish well. The bushes—some of them of large size—had completed their growth, and presented a capital crop of flower-buds. In the case of *Camellias* out-of-doors, though, let the position be as favourable as it may, success depends very much upon the weather during the time the flowers are opening; they are so easily disfigured by damp as well as cold.

Near to the Terrace is a very pleasing arbour, or arcade, covered with *Grape-vines*. Being of good height and proportions, it is much more inviting, especially during bright sunshine, than the somewhat formal arrangements which prevail around it. A part of the flower-garden is illustrated in fig. 149. It is rather formal in style, and during the summer is kept very gay with flowering plants of an ordinary character.

It is on a slope upon the opposite side of the house, and much better sheltered, that the greater number of Coniferous trees, and more or less tender shrubs, have best succeeded. *Escallonia macrantha*, which may be seen in numbers in many parts of the Island, does well here. It is a dark, glossy-leaved shrub, with conspicuous crimson-red flowers. Another shrub well worthy of mention is *Desfontainea spinosa* an evergreen Holly-like Loganiaceous

flower and bear seeds freely. The Tulip-tree (*Liriodendron tulipifera*) grows and flowers well, too; but the specimens of *Panlownia imperialis* are not so good, probably the winds are too keen, for on the southern side of the Island they flourish well. *Embothrium coccineum* is less happy here than it is sometimes seen. It is a small South American evergreen shrub of very ornamental character, and produces showy, pendent, orange-scarlet flowers; it should be

trees of one species or another in conspicuous places throughout the grounds. But this brings us to speak of the—

MEMORIAL TREES.

one of the semi-private features of the pleasure-grounds at Osborne. To write a complete history and description of them would be to write a history of the private life of the Queen during a great part of her long reign. Since the late Prince Consort purchased the estate from Lady

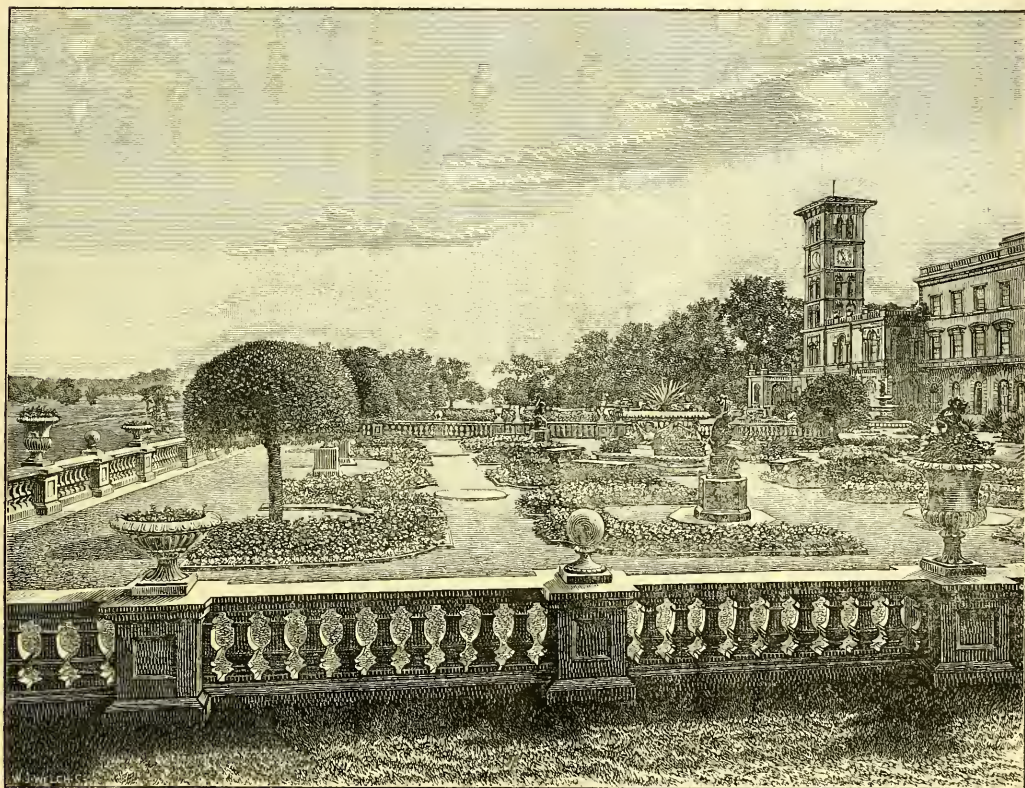


FIG. 149.—A VIEW OF PART OF THE FLOWER-GARDEN AT OSBORNE.

(Photographed by Hughes and Mullins, of Ryde.)

plant from the Andes. The tubular flowers have a scarlet corolla and yellow limb, resembling to some extent those of the better known greenhouse plant, *Libonia floribunda*; it grows and flowers here freely each year. *Buddleia globosa*, as might be expected, is very happy; and apparently so is *Photinia (Eriobotrya) japonica*, the Japanese Medlar or Loquat, an attractive shrub at all seasons of the year, but of too tender a character for any but warm and sheltered situations. There are fine plants of *Fatsia japonica* (the old *Aralia Sieboldii*) in many instances, and they

tried in all situations where it is likely the plant may succeed. *Eucalyptus globulus* is seldom badly injured, and the *Catalpa*, *Quercus glabra* and *Quercus Ilex*, all figure among the denizens of the pleasure-grounds. The last-named *Quercus* (Evergreen Oak) does uncommonly well, and reminds us of the immense leafy specimens we are familiar with around Cardiff Castle and in other localities in South Wales. A magnificent specimen on the lawn, near the front entrance, is 250 feet in circumference, and is one abundant mass of foliage. The great family of *Conifera* is represented by

Isabella Blachford, and it has been in use as a Royal residence, it would appear that the most distinguished visitors to Osborne have been "tree planters." The rulers of Germany, Russia, and other countries, have all essayed the task, and besides, we noticed a specimen of *Sciadopitys verticillata*, planted by the Queen herself; and an *Abies Pimensis* which remains as the result of the work of the late Earl of Beaconsfield. In every case the tree has a substantial label affixed to it, denoting by whom and when it was planted. In view, however, of the liability there exists in

the best regulated gardens—even Royal ones—for labels to go astray, we believe a book is kept, in which is a complete record of these particulars. It would be instructive to carefully note the date of planting in individual cases, and the progress the tree has made, but our time did not permit of doing this systematically, though many particulars of this kind are given when speaking of "Queen's Trees" on p. 105. The *Cryptomerias*, *Retinosporas*, *Abies* (*insapo*), *P. pungens*, and the species of Cedars, had all made satisfactory growth. There is a magnificent Cedar close to the house, presumably *C. Libani*, of fine proportions, upwards of 50 feet in height, and quite as much in diameter. Then there are other memorial plants of a more private nature than the trees, and they are plants which have been struck from "slips" contained in Royal bouquets. Thus, many of the Myrtles that abound owe their life as well as much of their interest to a wedding, a baptism, a confirmation, or possibly a death in the Royal family. For instance, we were shown one that was struck from a cutting on the occasion of the marriage of our Princess Royal, now ex-Empress Frederick of Germany. Many such cases occur, and to members of Her Majesty's family they must afford unusual interest, especially during this the sixtieth year of Her Majesty's reign.

The Swiss chalet, or cottage as it is called (see fig. 150), contains a museum of natural history, and other curiosities. Besides being interesting in itself, this cottage is surrounded by the flower-beds and small kitchen gardens that used to belong to the young Princes and Princesses many years ago. The little garden-tools are still preserved there, including the wheel-barrow that was once part of the Prince of Wales' equipment, and bears the letters "P. W." upon it. The initials, indeed, of most of the Royal children may still be seen on the handles of one or other of these very interesting relics of the time when the Queen's children were as young as her great grandchildren are now. The grounds around Swiss Cottage also contain many of the memorial trees.

The *Hollies* in great variety are exceptionally fine, particularly *Ilex pendula*. Some of the specimens of *Cypripedium macrocarpa* are now 60 feet to 70 feet in height, and appear to have thrived best among the Conifers that have been planted on the estate.

The kitchen garden is a small one, and not specially remarkable. There are ample means at Windsor for the production of vegetables and fruit, that more at Osborne may not be necessary. It should be mentioned, however, that in one corner of the kitchen garden an Orange-tree grows and fruits well upon a wall; during cold weather in winter it is protected by wooden shutters.

Much conjecture has been written in the press about—

THE GLASS-HOUSES

at Osborne. Sometimes it is said there are few, and at others that there are no fruit-trees. But some time ago a paragraph was circulated containing the news that Her Majesty had decided to build an extensive range of such structures, and that she was about to acquire additional land for the purpose.

If a new winter-garden were thought desirable, an estate of much less extent than Osborne would afford an abundant site. But we were unable to learn of any sufficient ground that existed for the suggestion.

The houses there at present are useful for the production of flowers for cutting, and of de-

corative plants for furnishing the mansion, which, during the time the Court is in residence—as at Christmas—are required in considerable quantities.

Our visit was made at a season when the houses might be expected to look less gay than usual. There were plenty of well-grown bush plants of late-flowering *Chrysanthemums* in bloom, and previously at some of the exhibitions in Hampshire, *Chrysanthemum* blooms from the Osborne collection had been shown successfully in competitive classes. Plants of *Solanum capsicastrum* were likewise good, and much better "berried" than we sometimes see them. Another well-known plant had been cultivated to good advantage in the stove, viz., *Euphorbia Jacquiniflora*, plants of which had fine long shoots with healthy foliage retained nearly to the base, and numerous opening flowers.

Carnations, especially the winter-flowering sorts, are done well, and the plants were in good health. They are especially convenient and pleasing for the making of bouquets for the Queen, who, in her well-known distaste of artificiality, prefers to have her flowers unwired; and it is said she not uncommonly pulls her bouquets to pieces, and re-arranges the blooms in glasses with her own hands. Violets are cultivated in frames to supply plenty of blooms during Christmas and the succeeding weeks. Occasionally, when large dinner-parties are given, extensive table decorations become necessary. Ordinarily, this work is done by persons who travel with the Queen for that and similar purposes, and known as the "deckers;" but the gardener has to do it sometimes. Carnations are extremely useful for this purpose, and so also are Roses, of which there are many bushes in the grounds. During the present month and in July, the national flower is uncommonly abundant at Osborne. It may be remarked that upon a few Tea Roses that grow at the foot of a front wall to one of the houses, we were told that there had been blooms during the whole twelve months preceding. During the last two years or so the gardens have been under the care of Mr. Geo. Nobbs.

It will be remembered that the Court was in residence at Osborne last year when the Chinese envoy, Li Hung Chang, visited Her Majesty, and most of the presents he brought from the Celestial Empire are still there. It will be remembered that Her Majesty gave a commission for a painting of Osborne House for presentation to the envoy as a souvenir of his visit. *Inspector.*

PLANTS OF THE VICTORIAN ERA.

HARDY TREES AND SHRUBS.

IT seems the peculiar province of Queens to lend patronage and countenance to our ancient art, for history teaches us that under Elizabeth, Anne, and Victoria, all things connected with the arboreal and floral decoration of mansions, and even ordinary residences, were greatly in vogue.

Though the prim formality of the Tudor age is quite a thing of the past, the influence of the last of the Stuarts remains by us in many formal mansions with their attached pleasure-gardens, all eminently characteristic of the age which created them; and when the Victorian age passes into the region of history, it will be found, more than any that preceded it, to have been a period in which horticulture has flourished.

Nurserymen and others have, at great trouble and ungrudging expense, sent out pioneers

into new countries and districts, ransacking the world as it were to find new or little-known plants wherewith to enrich our garden-floors. It is to call attention to and curiously describe some of these that I now propose, but restricting my remarks to the hardy trees and shrubs that have been introduced to commerce since the Queen's Accession in 1837.

At no period in modern times has the professional hybridist been more active, for no sooner has a new actor been introduced upon our stages, or a new subject planted in our nurseries, than it has been taken in hand, and made all the possible use of it could be, and we have resulting a vast accumulation of new and improved forms of already existing trees and shrubs, so that at the present moment, instead of a paucity of subjects to select from, the gardener, more especially the landscape-gardener, is embarrassed with a plethora of suitable plants and trees out of which to choose the most fit for his purpose.

To take the *Clematis*, for instance: what undreamt-of results have accrued since Thomas Cripps in Kent, and G. Jackman in Surrey, set themselves systematically to improve these fine climbing plants! One of the first was *Clematis Hendersoni*, which in our days would be hardly looked at, yet when it flowered for the first time at Chandler's nursery in the Wandsworth Road, it was thought much of, and was named in honour of its raiser from seed, after Mr. A. Henderson, of Pine-apple Nursery. But then all that could be said for it was, that it was a trifle larger and brighter in colour than then known kinds—but it is worthy of notice, as doubtless it has had a share in the production of some of the fine hybrid varieties that now adorn our gardens. Another sent us by Von Siebold in 1836, but not in commerce till at least three years later, *C. florida*, lends itself freely to the skill of the hybridist. Now we have upwards of 100 fine kinds to select from, all produced in the Victorian Era.

The average Briton loves to "cover his house" with something, climbing plants by preference, otherwise paint. My father planted one of the first *Glycines* (*Wistaria*) that was raised in England, and before I was a man it had covered three sides of a large house, and had a main stem as thick as my body. It flowered, unless hard hit by late frosts, without foliage, on the south wall, early in May, and again in the autumn, and is doubtless one of the very finest of all our free-growing ligneous climbers; it, however, though uncommon, was introduced three years after Waterloo, but could hardly be met with in nurseries till after the Queen's accession, while its delicate white variety did not reach us till seven years later. Veitch's Virginia Creeper, *Ampelopsis Veitchi*, another indispensable climbing plant, was introduced by the late J. Gould Veitch, and was first described in these columns. It is the very best self-supporting decorative plant for our walls that we possess, as well as one of the most popular.

Among handsome-leaved trees, *Acer Negundo variegatum* stands conspicuous. It, I believe, originated from seed (?) in Van Houtte's nursery, in Ghent, and sprang immediately into general favour—and now we have the purple-leaved *Plum*, as well as the noble purple Beech to plant in marked contrast; while another useful Amentaceous plant, the Filbert, has given us a rich purple-leaved sort, all within the famous sixty years we now commemorate. Among other plants used for wall-screens or to cover unsightly fences, we have two that give us their bright yellow flowers in winter and early spring, *Forsythia viridissima* and *Jasminum nudiflorum*, both of which have been introduced to our gardens since '37 from China, and giving their blossoms in a flowerless season are a most welcome addition. These are very closely followed, in the south at any rate, by the brilliant inflorescence of the *Berberis Darwini*, introduced just ten years after Her Majesty's accession by Mr. Lobb; and soon after we had two more grand *Berberis*, *Mahonia japonica* (Beali), and *M. nepalensis*, though the latter is not often seen, as it requires a wall or fence to enable it to resist our wet cold winters. In passing, I must

pause to note the lovely hybrid, *B. stenophylla* ×, sent out, I believe, by Messrs. Veitch.

Collectors have been so very active during this period that we have literally an *embarras de richesses*; and when we come to consider that Japan was opened to commerce, British Columbia and California explored, each of which countries teems with new and beautiful plants, shrubs, and trees, this need not cause us to wonder.

From California and British Columbia, and still further north from the wind-swept plains of Oregon and Nebraska, we got, through the aid of Russian explorers, the Nootka Sound Cypress, *Cupressus nootkensis* (usually called *Thuopsis borealis*); and Scotch collectors sent home seeds of the elegant Cupressus, named after the late Charles Lawson, *C. Lawsoniana*, and this

bo appreciated from its great vigour and beauty, combined with extreme hardiness.

To flit from America to Europe, the grand Crimean Fir, *Abies Nordmanniana*, must be noticed, as it is very hardy, grows to a great size, and assuming a compact, massive pyramidal outline, is most useful to the landscape gardener. Colonel Duncan Cameron, of the Royal Artillery, sent some small seedling specimens in pots to his sister, the late Mrs. Schreiber, during the Crimean war, and they are now quite features in the landscape, though, perhaps, too abiding mementoes of that costly struggle. Then we have *Picea pungens glauca*, with its branches densely covered with frosted silver needles, that at once arrest the notice of even careless observers. In marked contrast, we have one of J. G. Veitch's many

nubigenus, introduced by William Lobb in 1849, is another Yew-like Conifer, but it is not hardly enough for general use. *Libocedrus* is another genus new to the reign, the Chilean form having been introduced by Hugh Low & Co., of the Clapton Nursery, as recently as 1847. Where it can resist the cold of our winters it forms an unique tree, but cannot do so without shelter.

Writing from the south coast it will not be right to ignore one of the most useful Conifers for planting in positions exposed to the sea-breeze that was sent us by Mr. A. B. Lambert from California, the year after Her Majesty's accession, *Cupressus macrocarpa*. The great drawback to its use is that it must be nursed in pots in its early life, it then too often makes corkscrew roots, and when planted out it grows very rapidly and strong, forming a dense pyramidal tree. Alas, the first strong gale is apt to blow it clean out of the ground [unless it be rocky. Ed.] if not staked and sheltered. I have known specimens 10 to 12 feet high thus ruined. Both for its great green colour, this Conifer was a decided acquisition.

Before concluding the long list of Victorian Conifers, the Japan Cedars (*Cryptomeria*) must be mentioned. The first we had came to the Royal Horticultural Society through their able collector, Robert Fortune; then we had an improved, and more dense form, through Thomas Lobb, in 1853; and in 1857 Mr. J. G. Veitch sent us *C. elegans*, a variety of very easy propagation from cuttings. It is bright green in summer, of a warm bronzy hue in winter, and, therefore, most useful to contrast with golden *Enonymus*, golden Conifers, and other bright-hued shrubs, in making our parterres gay and interesting in mid-winter. Without doubt the most generally useful and finest Conifer introduced to commerce in the reign, was the *Thuja Lobbi* [which turns out to be the original *T. plicata*. Ed.], the most brightly-coloured and vigorous of all the Arbor-vitæ. This was sent us in 1853 by William Lobb, then collector for Messrs. J. Veitch & Sons; and though it has no fewer than three other names, let us keep in gardens the one that preserves the name of an intrepid, energetic, and painstaking pioneer among modern collectors.

There are two more Conifers that must have at least a mention, though neither has taken hold on public taste. *Saxa Gothica*, conspicuous, named in honour of Prince Albert, and *Fitzroya patagonica*, named after Captain Fitzroy, Commander of the *Beagle*, both being introduced from the extreme south of the S. American continent; and from this region also one more Victorian Conifer hails, the *Prumnopitys elegans*, which may be called the Plum-bearing Yew, as it gives in its native country fruits which are eaten by the natives, and are described as resembling a Sweetwater Grape, but with a stony seed like that of a Cherry. *Experience*.

(To be continued.)



FIG. 150.—SWISS CHALET AND ROYAL CHILDRENS' GARDENS AT OSBORNE. (SEE P. 395.)

varying almost indefinitely from seed; an old friend of mine going the length of saying that in a bed of seedlings it would be difficult [impossible, he might have said. Ed.] to find two plants exactly alike. We now have more than a dozen distinct and exceedingly useful varieties to enrich our Pinetums for cemetery work, and in a small state used as pot-plants, or to fill window-boxes, particularly the golden form "Iutea," and the compact pyramidal variety, *erecta viridis*, raised by Anthony Waterer. Now I am among the Conifers I am puzzled to make a judicious selection from the many introduced by Fortune, Jeffery, Lambert, and others, during the Queen's long reign. *Tsuga Albertiana*, but more properly called *Tsuga Mertensiana*, thus named in honour of the lamented Prince Consort, has in all probability come to stay, and though at present foresters do not think much of the value of its timber, it will always

introductions from Japan, *Picea polita*. The lovely *Cedrus Deodara*, unless in favoured spots, seems anything but happy in our island-home. Among later introductions, we have few more unique in character than one introduced by Mr. Maries for J. Veitch & Sons, and named after that well-known name, *Abies Veitchi*. This might be described as a miniature form of the lovely but tender *Abies Webbliana*, as it has erect cones of a rich brown-purple colour, though its foliage in size and colour differ from that fine Fir.

Leaving the Conifers proper, we have other allied members, introduced to gardens since 1837, viz. *Cephalotaxus*, all from China and Japan, for the one that came to us in that auspicious year was once popularly called *Taxus Harringtoni*, though really a fastigate variety of *Cephalotaxus pedunculata*. I cannot claim for them a high position, as they are only low-growing shrubs at the best. *Podocarpus*

NEW OR NOTEWORTHY PLANTS.

DENDROBIUM VICTORIAE REGINÆ, n. sp., Lohrer.*

This is doubtless one of the most wonderful *Dendrobiums*, both for its beautiful blue colour and for free flowering, and one that will soon be a great favourite with Orchid collectors. It grows at an altitude not lower than 2000 metres (6000 feet), and the temperate house suits it best.

Its branching stems produce great numbers of richly dark blue and white blossoms borne in trusses, and lasting in bloom for several weeks. The flowers are over an inch in diameter, the sepals and petals at

* *Dendrobium Victoriae Reginae*, n. sp.—Pseudium, articulis, articulis clavatis; foliis ovato-lanceolatis, acuminatis; flores pedicellares in glomerulis, 3—12-floribus; sepalis lanceolatis, exterioribus basi in calicem obtusum connatis; petalis ovatis, obtusis breviter acuminatis, labello indiviso e basi angustata oblongo-ovato, acuminato, limbo expanso; columna brevis crassa, alba, sutura emarginata; corollæ phyllis labellicum violaceis, basi albis, calicem violaceo, germine viride.

the base are white, with a great blue blotch at the edges, the lip ovate oblong, and of the same colour. The plant is dedicated to the Queen in commemoration of the Victorian Jubilee, and is without doubt one of the finest of all *Dendrobiums*. *A. Loker, Manilla, April 20.*

PLANT NOTE.

EREMOSTACHYS LACINIATA VAR. IBERIBA.

The typical species, *Eremostachys laciniata*, is a little-known herbaceous plant from the Levant, rarely met with in cultivation. It has yellow flowers in verticillate spikes which appear in June and July; the plant grows about 2 feet in height, and has long oblong lanceolate and deeply-cut leaves. The plant under notice is a new variety of the type, and is in flower at the present time in the Woking Nursery. It is superior to the type, with long simple stems growing to a height of 4 to 5 feet, with whorls of large deep crimson flowers; the upper lip of the corolla being purplish-red, and the lower lip deep crimson. The stems and flowers being covered with a white silky tomentum. It is quite hardy, and appears not to be particular as to soil. *E. S.*

ORIGIN OF MARÉCHAL NIEL ROSE.

The wonderful stories which get into the daily press in all matters relating to horticulture have been well exemplified and exposed in the columns of your contemporary, the *Gardeners' Magazine*, in which a paragraph is cited from one of the dailies in which there are about as many inaccuracies as it is possible to crowd into a small space. It is so very good that it is a pity that all Rose growers should not know it, this is the story:—"It was the beautiful Empress Eugénie, in the days of her splendour, who named Maréchal Niel. When General Niel returned from the scene of his achievements in the Franco-Prussian War, a poor man gave him a basket of lovely pale yellow Roses. As a remembrance of this gift the General had a cutting struck from one of the blooms, and when a charming Rose had grown up, took the plant to the Empress Eugénie. She was delighted both with the gift and the gallant donor, but was surprised to learn that the Rose had no name. "Ah!" she said, "I will give it a name; it shall be the Maréchal Niel." In this sprightly and gracious manner the gallant soldier was made aware of his elevation to the coveted office of Marshal of France.

I need hardly dwell upon the anachronisms in this paragraph, and would not have noticed it at all, but that I happen to know, perhaps, a little more about it than anybody living. I was in Paris the summer before it was sent out, and a well-known Parisian Rose-grower, who was at that time sending out annually a number of new Roses, expressed his wish to see me. He breakfasted with me one morning, and brought with him a box of Roses; they were mostly reds of various shades, and if I recollect rightly, that fine Rose, Dr. Andry, was amongst the number. Just at the bottom of the box I espied a glorious Rose. "What is that?" I asked. "Oh! it is a *Nicolette*, Maréchal Niel," and he expressed some astonishment when I asked, "Why that is worth all the rest put together." He talked about it, and "My advice to you would be, if you have not got a large stock, to increase it as much as you can, come once to England and exhibit it at one of our Rose shows, for I venture to say you will make a small fortune of it." He thanked me, but I did not see much sign of his agreeing to my advice. I did not understand his reluctance at the time, but soon afterwards found out what I believe was the cause; the Rose is said to have been raised from Isabella Grey by Pradel, and a portion of the stock had passed on to the nurseryman I had mentioned, and thus he was not in a position to announce himself the sole distributor of it, and that of course prevented him from profiting by my suggestion. He sent out a number of Roses that year,

and offered Maréchal Niel as a gratis plant to those who took the set he was distributing, and thus what we may truly call the "golden opportunity" was lost. As soon as it was seen it took everybody by storm—it was sought for on all sides; and, up to the present day, remains one of the most popular Roses in cultivation. This is a simple story, and not so romantic as that quoted by your daily contemporary, but having one element which lacks—truth. It is a curious thing that, though Maréchal Niel has been upwards of thirty years in cultivation, nothing has since been raised at all comparable to it. *W. D. Rose.*

THE WEEK'S WORK.

THE HARDY FRUIT GARDEN.

B. H. W. WARD, Rayleigh, Essex.

Watering Wall-trees.—Reiterating my remarks as to the necessity for affording water liberally to fruit-tree borders, and especially to those in which wall-trees are grown, say once a week to the latter, and rather less frequently to the other, the warmer aspects will require most water during the period of active growth, and when fruits are swelling; at which time diluted liquid manure given alternately with clear water until the fruit begins to change colour, is of great assistance. If liquid manure cannot be obtained, a good substitute will be found in the XL All Liquid manure, a concentrated clear liquid possessing great fertilising properties. Standard fruit-trees and bushes growing in light or shallow soils are much benefited by this sort of treatment, as also Raspberry plantations and Strawberry beds directly after the plants have set their blossoms.

Strawberries.—The necessity to protect the fruits from the birds is present in most country gardens. Raspberries and Strawberries which have to be sent by rail or road should be gathered rather under ripe, otherwise they will not travel without damage, no matter how carefully they may be packed. Forked sticks long enough to keep the netting about 6 inches above the plants should be stuck into the Strawberry-beds to support it, otherwise thrushes and blackbirds will peck the fruit. The time has arrived for taking runners for fruiting in pots from February next and onwards. For some years I have not layered the runners into 60's, but placed them at once on the fruiting-pots instead, and with very satisfactory results, including the saving of much valuable time. For those plants that are to fruit early, small 32's form a suitable size of pot, large 32's being employed for late fruiters. The new variety Royal Sovereign is a first-early Strawberry, both as a forcer and out-of-doors; and in addition to earliness it has size, good form, solidity of flesh, and good quality to recommend it. Sir Joseph Paxton is, as everyone knows, a good all-round Strawberry, and large numbers of these varieties should be layered if they are already found in quantity in the garden. Whether small or large pots be used, they should be new ones that have been immersed for a short time in water, or old ones washed clean. It will suffice to place a hollow crock on the hole, the hollow side downwards, and cover this with smaller crocks to the depth of an inch, and over these a layer of turfy bits and a sprinkling of soot. This done, fill the pots to within three-quarters of an inch of the top with the good loam, and ram this moderately firmly. Should the loam be poor, add a quarter of the whole to a common garden barrowful of bone-meal. Stand the pots when filled, between alternate rows, and secure one strong runner in the centre of each pot, with a hooked peg or a piece of stone. In dry weather the soil in the pots must be afforded water almost daily, and if a sprinkle can be given the runners every evening, rooting will be hastened.

PLANTS UNDER GLASS.

By G. H. MAYCOCK, Gardener, Luton Hoop Park, Luton.

Gardenia floribunda.—These cuttings which, taken in early spring and potted into 60's when rooted, may now be shifted into 48's for flowering in the spring of next year. Let the plants be syringed night and morning with clear rain-water, and the pit in which they are placed be maintained in a moist warm genial state. If rain-water be not available, it will be advisable to syringe or dip them overhead once a week into

water containing an insecticide, always laying the plants afterwards on their sides to drain. The potting-soil may consist of fibry loam one half, peat one half, with sharp sand, and charcoal in a small state added to these materials. Shade the plants until roots appear in the new soil, and then gradually inure them to full sunshine.

Gloxinias.—The amount of water applied to the soil of the early hatch may now be lessened, as these plants are passing out of flower. If the tubers are to be kept for flowering early in the spring of next year, place the pots in a cold frame, and afford sufficient water as will keep the tubers plump after the leaves have dropped naturally. The seedlings of this year's raising will now require to be potted for the last time. A low-roofed warm-pit makes a suitable place for these plants, the stage being covered with a layer of freshly-gathered moss, and the plants stood thereon. Shade the plants from strong sunshine.

Cyclamens.—If these plants were potted as advised in an earlier Calendar, they may now be placed on a coal-ash bottom in a cold frame, affording them ample space, so as to let the foliage develop without crowding. Keep these plants also shaded from strong sunshine, and on warm nights in July and August remove the lights, replacing them in the morning. A moderate degree of humidity should be maintained about these plants, and thrips not allowed to gain a foothold on the leaves.

General Remarks.—Plants of *Libonia forficuoides* should be shifted before becoming pot-bound, and removed to a cold pit or house, the syringe and clean water being in daily use to check the inroads of red-spider, the only pest with which the plant is troubled. Rooted cuttings of *Eupatorium* should be potted into 48's, and the shoots topped occasionally to induce bushiness. An abundant sowing of *Rhodantha Maaglesii* may now be made in 48's for late summer flowering, sowing thinly on the surface of the soil, which should consist chiefly of sandy peat and leaf-mould. The number of plants left to grow in a pot of this size may not exceed ten. Azaleas having in most cases finished growth for the season, may safely be placed out-of-doors, with a temporary framework of laths or tiffany over them, letting this remain for three weeks or a month. If the plants can be plunged in coal-ashes or sand, the amount of water required will be lessened, and the roots, which are hair-like, will not suffer from getting dry, as they need most when the pots are exposed to the air. If that cannot be done, dip the pots into others one or two sizes larger, or shade them with a tile, piece of bark, or a board. *Achimenes* now showing flower may be tied out, if in pots, or regulated if in baskets. Use but few supports and ties, and make these as little visible as possible. Plants of *Francoa rosea* that were raised from seed in the month of February may be put into cold frames. At one time this pretty plant was a great favourite with the Queen.

THE ORCHID HOUSES.

By W. H. WHITE, Orchard Grower, Burford, Oxford.

Species which have Recently gone out of Flower.—The plants of *Odontoglossum citrosum* are at Burford growing with freedom, and as the roots commence to push from the newly-formed breaks, is then the time to repot all that may require more root-space. *O. citrosum* is a plant that makes but few roots, and consequently it is not desirable to use peat and sphagnum-moss in large quantities in which to root. Let the plants be hung up in a sunny part of the Mexican or Cattleya-house, and as the new growths advance, afford water freely at the root, and maintain the air in a moist state. On sunny afternoons, on closing the house, afford the plants a light overhead syringing. *Thunia Marshallii*, *T. Bensoniae*, *T. Veitchiana*, *T. alba*, *T. Brymeriana*, and *T. candidissima* should be afforded sunshine in abundance, and the flowering growths will not mature. *Thunias* may be finished up in an early vinery, provided the shade is not very dense. Until the leaves of these plants begin to change colour, the latter should be afforded water occasionally, and the leaves examined weekly, red-spider being apt to infest them. Should any of these acari be noticed, syringe the plants with a strong soap-suds made from soft-soap and rain-water, the mixture being used at about 90°, and the plants be rinsed afterwards with clear tepid water. After the fall of the leaves keep the plants in a dry house, where the temperature does not fall below 55°. *Thunias* which may not have flowered this season, and have grown to a great length, should be treated in exactly the same manner as those which have flowered.

Plants of *Cattleya Mossie* and *C. Mendii*, if they have begun to grow at top or root, may now be spotted or top-dressed. Plants of *Lælia purpurata* should be placed in the coolest part of the house in order to keep growth dormant as long as possible, it often happening that plants will begin to grow at this season and to produce flowers, while those that start later invariably bloom at the right season. When the breaks of *L. purpurata* have reached a length of a few inches, new roots are emitted from them, and then is the proper time to report any that is standing in need of more rooting space; and equally so *Lælia-Cattleya Phoebe*, *L.-C. Latona*, and *L.-C. Hippolyta*. The plants of *Miltonia vexillaria* which have passed out of flower may be removed to a light position in the cool-house and freely ventilated, but affording them scarcely any water till growth has recommenced, as the roots being almost dormant, readily decay if the potting materials be moist. *Miltonia Phalanopsis* may be repotted, the young breaks beginning already to push forth new roots; avoid over-potting this plant, afford plenty of drainage, and elevate the plant so as to bring it well up to the roof of an intermediate-house. *M. Roezlii* may also be repotted, and placed at the cooler end of the East Indian-house. Both species require only sphagnum-moss in which to root. *Oncidium*s, such as *O. Marshallianum*, *O. concolor*, *O. nutiginum*, and *O. olivaceum*, should be placed in a moist, cool house, and kept rather dry at the root until growth starts anew. *Masdevallias* and *Odontoglossums*, when out of flower, should not be kept very moist at the root, or the decay of the latter will occur, the leaves of the *Masdevallias* be disfigured by black spots, and the old foliage of the *Odontoglossum* turning yellow, and falling off.

THE FLOWER GARDEN.

By CHARLES HERRIN, Gardener, Droppore, Maldenhead.

The Herbaceous Border.—The refreshing rains of the past week have caused a rapid growth in most of the plants, and much attention will be required in the matters of staking and tying from time to time. The *Michauxias* *Daisies* of tall growth will also require to be staked and tied in order to preserve the flower-stems in an erect position. The earlier-flowering varieties, if desired to be made dwarfer than usual, may have 5 or 6 inches of the points taken off, which will induce a bushy habit; and although the spikes of flowers may not be so long as the unstoppered ones, for border decoration they are even more effective. The Double White Rocket (*Hesperis matronalis albo pleno*), has flowered well this season; it is a good old-fashioned border plant, and one that is very useful where many cut-flowers have to be supplied. As soon as a flowering is past, the flower-stems should be cut away carefully to within 6 inches of the base of the plant, preparatory to transplanting the latter as soon as new growth commences. This should be done annually if a stock of healthy plants of this sweetly-scented perennial has to be maintained. *Doronicums* of the larger flowering species, as *D. plantagineum*, and *D. excelsum*, having now passed out of flower, the old stems should be cut away; and where an increase of the plants is desired, this may be done by division of the root at the present time. The smaller variety, *D. austriacum*, is still flowering abundantly, and gives promise of continuing to bloom for some time yet. Although a smaller and rather later-flowering species than the preceding, *D. austriacum* is a useful plant, and the blooms continue to be produced for a long period of time.

Saxifraga umbrosa.—London Pride is not a plant to be despised in the herbaceous border. Occasional clumps or edgings of it are effective especially while in bloom; and the flower-spikes are light and elegant in appearance forming good material for filling vases either alone or in association with other flowers.

Anelusa italica is a free-growing plant with flowers of an intense shade of blue, which are freely produced on spikes from 2 to 4 feet in height. It continues in flower from the present time, more or less, throughout the summer. The growths require to be kept erect by tying them to small stakes or bamboo canes placed so as to be as much out of sight as possible.

Carнатions are fast growing at their flowers, and where large blooms are required, the small side-flower buds should be rubbed off early, and neat sticks afforded to support the flower-stems. Where *Carнатions* are grown together in beds expressly for show or cutting purposes, it is a good method to stick in twigs of the Birch or those of other trees around the

plants as support to the flowers. It occupies less time than tying each stem separately, and answers the purpose just as well, moreover, the flowers are more readily gathered.

FRUITS UNDER GLASS.

By F. HAARAS, Gardener, Eastnor Castle, Ledbury.

The Early Vinery.—If any of the bunches still remain on the Vines, the air must be kept cool and dry, and if the fruit must be kept in good condition for any length of time, shading should be used on days that are hot and bright; and if the border, on being examined, is found to be getting dry, a fairly liberal amount of tepid water should be afforded on a bright warm morning, which will have the effect of keeping the berries plump for some time after being fully ripe. As soon as the Vines are cleared of the bunches, throw the lights as wide open as possible, and afford the Vines a heavy syringing with strong soap-suds in the evening, followed by another with clean water the next morning. By doing this occasionally, red-spider will do but little harm, and the foliage will remain in a healthy state up to the last.

Late Vinerics.—Vines with ripening fruit will require to have the foliage fastened back by degrees, so that it will not shade the white Grapes, the lateral shoots being allowed to run without, however, causing undue crowding. On the first appearance of red-spider on the leaves, use a small piece of sponge and some soapy water for its removal. If the berries of Foster's Seedling and Madresfield Court crack their skin, keep the border dry beneath the Vines, and allow the laterals to run for a time till the malady is cured. I have found that the most critical time for these two varieties is when the colouring of the fruit commences, but once safely over that period, there is little danger of cracking.

Late Vinerics.—The thinning the bunches will in most instances have been finished. This operation should be followed by a thorough soaking of the borders with liquid-manure mixed with boiling-water. It is likewise advisable to syringe the Vines with clean rain-water in the evening occasionally. Let the laterals be secured to the wires, and where it can be done without crowding, allow these shoots to extend themselves. In all cases it is well to ascertain if a second thinning of the bunches be not called for, taking out a berry here and there, but having an eye to perfect compactness of bunch. Lady Downes, a variety that is apt to scald, should be afforded a slight amount of front and back ventilation the last thing at night, which ensures a dry, buoyant atmosphere in the morning, when, in the majority of cases, scalding chiefly occurs.

THE KITCHEN GARDEN.

By W. POPE, Gardener, Highclere Castle, Newbury.

Mulching Vegetable Crops.—From the present date mulching will play an important part in the vegetable garden if this be situated on light or shallow soils, it being almost a prime necessity in unusually warm summers, and one which always pays for the doing. On heavy land mulching is not so important, provided a friable tilth can be secured by the use of the hoe, which greatly aids in checking the evaporation of moisture from the land. Runner Beans and Peas are two kinds of vegetable crops that are much benefited by a liberal mulch of spent bodied, or Mushroom-bed dung placed along each side of the rows, a thorough soaking of the land being afforded previously. Never apply water in dribbles and thereby attract the roots to the surface only to perish, but apply water in abundance, at intervals of three weeks or so. The Cauliflower is also benefited by a thick mulch of rich, half-rotten stable or cow-manure, as are also Globe Artichokes, Leeks, and freshly planted Celery, a slight sprinkling of salt being applied before the manure is the last named crop. The short grass from the mowing machine may be usefully employed in mulching Carrots, it being easily put on the land, and if it be done in good time, it is useful as a preventative against wireworm. It is not generally advisable to mulch Onion with manure, but to keep the surface well stirred.

Asparagus.—The season of this vegetable will soon be over, the rule in many places being to discontinue cutting as soon as the outdoor Peas come into use. If manure-water and the labour to apply it be plentiful, a good soaking of liquid-manure applied about this date will strengthen the crowns greatly. Failing manure-water, a sprinkling of salt and soot or guano may be afforded the plants in showery

weather, or before water is applied. Keep the beds free of weeds, and secure all the stronger stems to sticks, or to tarred string run along the rows of plants.

Salads.—The consumption of salads being now great, weekly sowings should be made of Mustard, Cress, and Radishes, choosing for the beds a somewhat moist, and yet not much shaded a situation in the garden. Lettuce in variety may be sown once in ten days, thinning the plants early at from 9 to 12 inches apart; a few being also transplanted. Make a sowing of Endive, and thin those earlier sowings as soon as the plants can well be handled.

Peas.—Late Peas should now be sown, choosing No 15 Ultra, a good and trustworthy variety; it is a rather tall Pea. Dwarf Peas for present sowing are Sutton's Late Queen, or Latest-of-All, which are varieties of splendid quality. Select for this sowing a sunny part of the garden, and one that is sheltered from the south-west. Sow the seeds thickly, preferably in trenches, and cover them with about 3 inches of soil, treading the soil firmly before and after sowing.

THE APIARY.

By EXPERT.

Supering Hives is an art requiring some little experience, the beginner, as a rule, being apt to make a mistake by putting on his supers long before they are really wanted. This of itself would not be so serious a matter if due precautions were taken to wrap up well, with plenty of warm packing, which in some measure would compensate for the loss of heat over the brood-nest, so useful at this particular time, caused, of course, by the empty surplus space made overhead. On the other hand, it is just as possible to be too late in putting on supers, particularly if the prevention of swarming is intended. If the bees have formed queen-cells, no amount of suppering will prevent their swarming out, provided the weather is favourable. Section racks, holding twenty-one 1 lb. sections are the most generally used in Scotland for surplus chambers when comb-honey is wanted. It pays to use full sheets of comb foundation in the sections at all times. My own preference is for the four-way sections with slotted metal dividers. If sections can be had with built-out clean combs left over from the previous season, a single row of these put in the centre of the rack acts as a bait, and will entice the bees more quickly into taking possession. Having the rack of sections ready to place on the hive, strip off the quilt, and blow a few whiffs of smoke across the top of the frames. Any brace combs or projections on top-bars should be scraped off, and the rack placed flat down on the frames, care being also taken that no warmth can escape at the junction of hive and section-rack. Now replace the quilt and other wraps over the rack, so as to conserve the heat, and keep all warm. Swarms, when received from a long distance, should be fed as soon as they arrive, and when put into their new hive do not neglect to give them a pint of syrup, or thinned honey, for the first two or three nights. This will well repay the bee-keeper who aims at results the first season. When living swarms on full sheets, see that each sheet of foundation is properly fixed or wired in the frame; another important point in getting good combs built out straight and even, is to see that the hive stands level, and that no more frames are put in the hive than the bees can fairly cover. Wraps must also be regulated according to temperature. Some days—and nights too—single thickness of carpet is enough; at other times, three thicknesses is not too much. Use your own judgment in this matter.

Ventilation.—In very hot weather, if the bees exhibit signs of distress by hanging out, give ventilation at the bottom of the hive by raising it up a little from the floor-board, lowering it again at night. Hives with sliding floors may have them withdrawn a little, or lowered at the front during the hottest part of the day; entrances also should be shaded if it can be conveniently done. Sometimes it is beneficial to remove the wrappings of supers and to slightly raise the roots of the hives in order to allow a current of air to play about, and so cool the surplus chambers. It is not often needful to take all these precautions, except in exceptionally hot summers, when more care than usual is required; a little extra attention, however, at such times is well repaid. It should be borne in mind that bees bred from eggs laid after the end of June, render no assistance in storing surplus honey (except in heather districts), so that the brood-nest becomes a minor consideration after this month is out. The bees are supposed to be already worked up to full strength, and for the next few weeks all our attention is required in giving them employment.

EDITORIAL NOTICES.

ADVERTISEMENTS should be sent to the PUBLISHER.

Local News.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

Newspapers.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

Letters for Publication, as well as specimens and plants for naming, should be addressed to the EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith. The Editor does not undertake to pay for any contributions, or to return unused communications or illustrations, unless by special arrangement.

Illustrations.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, &c.; but he cannot be responsible for loss or injury.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY,	JUNE 22—	Queen's Commemoration Day.
WEDNESDAY, JUNE 23	1897	Victorian Era Flower Show, at the Crystal Palace.
		Richmond (Surrey) Horticultural Society's Show, Royal Agricultural Society's Show, at Manchester (6 days).
THURSDAY,	JUNE 24	Colchester Horticultural and Rose Show.
FRIDAY,	JUNE 25	Maldstone Horticultural and Rose Show.
		Royal Botanic Society, Lecture.

SALES

FRIDAY, JUNE 25 { Imported and Established Orchids at Protheroe & Morris' Rooms.

AVERAGE TEMPERATURE for the ensuing week, deduced from Observations of Forty-three years, at Chiswick.—61° 8'.

ACTUAL TEMPERATURES.—

LONDON.—June 16: Max., 67°; Min., 52°.
 PROVINCES.—June 16 (6 P.M.): Max., 67°, London; Min., 48°, Aberdeen.

The Queen's Reign. On June 18, 1887, we had occasion, in connection with the fiftieth anniversary of Her Majesty's accession, to review the progress of horticulture during the half-century. We had a like opportunity on January 3, 1891, the occasion of the Jubilee of the *Gardeners' Chronicle*. Now, in 1897, when we are all jubilant over the sixty years of the Queen's reign, and the progress made in it, we might advert at length to the same subject, but that the iteration might be tiresome.

Every gardener of mature age must now be familiar with the general progress of his art, or if he is not, we may refer him to the two articles above mentioned. It may suffice to allude to the substantial general progress made since 1837, as shown in the article immediately following, and to indicate a few particulars in which advance in matters horticultural has

been made since 1891. The Royal Horticultural Society has been rejuvenated. The culture of Grapes, Tomatos, Palms, &c., for market, already vast at that time, has become even more colossal since, and the Rochfords and Ladds, and some others, may be cited as carrying on a "bigger thing" even than our transatlantic friends can show. Roses and Orchids are more in fashion than ever; Cannas have come to the front, and bid fair to be the originators of as great and important changes as are manifested by the tuberous Begonias.

After years of remonstrance and persuasion we have had the pleasure of seeing, through the influence of the new County Councils, a beginning made with the elementary education of our rural lads and, we may add, lasses, in horticultural and educational matters. Though we have laboured so long in the field, we are far from attributing this result to any efforts of our own; but in any case we may heartily rejoice that at length something has been done. As compared with what has been accomplished in America, in Germany, in France, in Belgium, what we have effected so far is infinitesimal, and instead of being in the forefront of educational progress as we ought to be, we are the veriest laggards.

With all our resources we are allowing ourselves to be beaten in some things by countries much smaller and with much less means than we can command. The last great war was won in the main by the superior education of the Germans. It will be the same with us in the field of commercial horticulture and agriculture, if we do not heed the signs of the times. We are glorying, and with justice, in the Victorian era and its progress, but if we wish to maintain our position, we must, in the coming years, pay much more attention than we have hitherto done both to general and specially to technical education.

POSSIBLY no retrospect in these Then, and Now, views in connection with the Diamond Jubilee would be considered complete which failed to take note of the material progress of the nation; that progress in the acquisition of wealth which has enabled the masses to indulge in luxuries of life unknown to them before Victoria mounted the throne and took possession of the hearts of her subjects, who, numbering some 18,000,000 in 1837, to-day show an increase up to twice that amount. The luxuries of life for them consist of and more better food of all kinds, including many sorts of vegetables and fruits; a plentiful supply of flowers and plants, improved drainage urban and suburban, and of many other matters which can find no place here. Month by month we give tables relating to the food supply, and of that connected with the raw materials employed in our great manufactures; week by week we give a list of market prices well worth consideration; to-day we give—first, tables relating to imports of foreign and colonial produce, to which are added for comparison the equivalents, as nearly as possible, entered for consumption at the present day; added to which, again, is a sectional table of imports and values, together with the same for the past five months of the present year of 1897—the sixtieth year of HER MAJESTY'S reign. (The prices not being given in the earlier Returns, the comparison is faulty to that extent, and the figures are doubtless approximate only; the Customs' dues on all would be of no assistance, and are therefore deleted.)

Necessarily, we can only give a selection from the quaint-looking Board of Trade Returns for 1837—the whole of which cover but six folio pages—the present-day returns cover 140 pages, or a decent-sized volume! The latter tables relate to exports of British and Irish produce and manufactures—complete so far as it goes (which is not very far, but all that is available). The remainder of the figures stand in the same relation as do those relating to the imports. The following is the Imports table:—

IMPORTS.	1837.	1896.
Butter cwt.	266,050	3,937,947
Cheese "	232,255	2,244,535
Eggs No.	74,790,678	13,244,893
Cocoa lb.	1,418,631	24,528,428
Coffee "	26,594,066	27,180,592
Tea "	31,572,516	206,608,791
Sugar cwt.	4,855,240	30,547,540
Opium qrs.	635,432	112,119,407
Wheat-meal and other kinds cwt.	40,391	21,661,320
Fruit, dried "	316,480	1,745,724
Lemons and Oranges, value £	2,391	1,369,675
Metals, iron bars, &c. ... tons	13,470	178,124
„ copper, &c. cwt.	56,018	1,000,469
Seeds: Flax, Linseed, Rape bush.	4,352,400	22,173,072
„ Clover cwt.	124,967	405,671
Silk, raw and manufactured lb.	4,906,455	7,566,256
„ pipes No.	134,714	1,896
Cotton-wool lb.	378,919,680	1,754,890,256
Wool, sheep or lambs' "	48,148,297	715,579,173
Spirits gall.	4,416,805	8,174,296
Wines "	5,463,182	15,861,251
Tobacco lb.	22,540,388	69,593,012

IMPORTS.	5 months, 1897.	
	£	£
Animals, living (for food)	10,438,699	4,396,451
(A) Articles of food and drink—duty free	146,301,708	60,230,343
(B) Articles of food and drink—dutiable	25,698,706	10,286,177
Tobacco—dutiable	4,370,670	1,629,059
Metals	29,464,756	8,853,491
Chemicals, dye stuffs, and tanning substances	6,784,845	3,345,719
Oils	5,446,709	2,857,931
Raw materials for textile manufactures	74,766,039	37,909,611
Raw materials for sundry industries and manufactures	47,240,940	16,867,171
Manufactured articles	81,250,453	36,532,133
(A) Miscellaneous articles	15,036,492	5,833,296
(B) Parcel Post	1,012,348	485,056
Total value £	441,807,335	189,221,470

There are enough items and figures to satisfy most folks in the above attempt at precision. A look down the items column will show in a moment how great is the difference between then and now. Our friends will perceive that, with the exception of Oranges and Lemons, no other fresh fruit is tabulated. To-day, or, rather, in 1896, we imported for home consumption, fruit to the value of £2,170,394. We grow the counterpart of all at home; but what is imported, excepting Canadian, is what may be termed "early" fruit. Of vegetables of all the sorts grown at home, we imported during twelve months to the extent of £2,874,388. About these figures there is something really magnificent, looking at the totals. Now take

* Great hundreds.
 † Now given in cwt., and exclusive of Beans and Peas



FIG. 151.—VIEW IN THE GARDENS, BUCKINGHAM PALACE.
(Taken by our artist, June 8, 1897, by Special Permission of Her Majesty. See p. 896.)



FIG. 152.—VIEW IN THE GARDENS, BUCKINGHAM PALACE.
(Taken by our artist, June 3, 1897, by Special Permission of Her Majesty. See p. 504.)



FIG. 153.—VIEW IN THE GARDENS, BUCKINGHAM PALACE.

(Taken by our artist June 3, 1897, by Special permission of HER MAJESTY. See p. 436.)

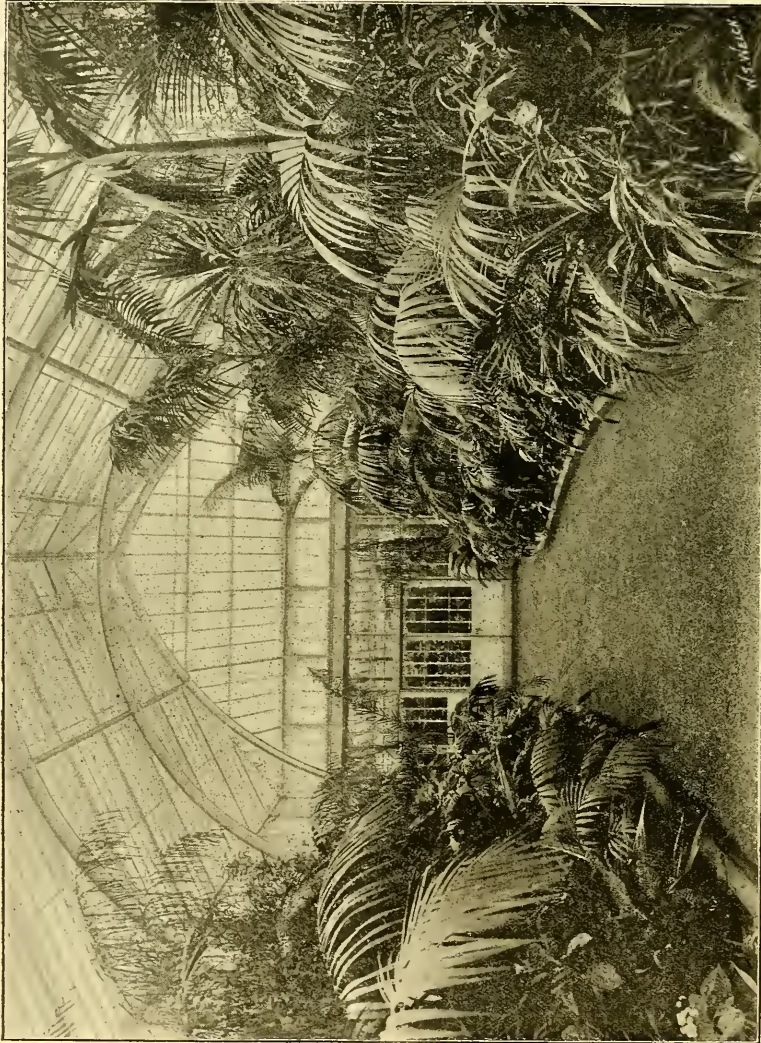


FIG. 154.—PALM-STOVE IN THE ROYAL GARDENS AT FROGMORE.
(Photographed by J. Russell & Sons, Windsor. See p. 333.)

up the exports of British and Irish manufactures as shown below:—

EXPORTS.	1837.
Total values	£ 36,421,129
Wool and culm	431,750
Cotton manufactures	13,625,464
Yarn	6,953,467
Earthenware	558,683
Glass	474,532
Hardware and cutlery	1,458,706
Linon manufactures	2,045,298
Metals: Copper and steel	2,069,363
Copper and brass	1,181,732
Lead	156,069
Tin in bars	76,316
Plates	347,433
Salt	192,969
Silk manufactures	494,560
Sugar, refined	602,377
Wool, sheep or lambs	190,657
Woolen manufactures	4,993,313

EXPORTS.	1896.	5 months, 1897.
Total value	£ 239,922,209	£ 98,920,455
Animals living	94,645	397,796
Articles of food and drink	11,355,141	4,340,915
Raw materials	17,692,507	7,818,674
Articles manufactured and partly manufactured, viz.:—		
Yarns and textile fabrics	105,353,592	41,601,002
Metals and articles manufactured therefrom (except machinery)	33,572,894	14,169,569
Machinery and mill work	17,036,890	7,244,235
Apparel and articles of personal use	10,473,945	8,979,883
Chemicals, and chemical and medicinal preparations	8,243,601	4,093,674
All other articles, either manufactured or partly manufactured	33,589,916	13,955,825
Parcel Post	1,699,669	814,768

EXPORTS.

To far-away seas in 1837 British ships were frequent visitors; to-day the sea is covered with British ships carrying imports and exports, for millions of Englishmen, Irish, and Scotch are colonising wherever that is found to pay—from Manitoba to Tasmania—round the globe, ever in advance of a rising sun. Every civilised nation in the world is engaged in getting ready produce for "the world's mart;" the fruits of every clime find their way to Covent Garden and other markets; our streets are paved with wood from New Zealand, Australia, and Canada; and ores reach us from both frigid and torrid zones.

Our colonies are the envy of other nations, whose inhabitants by tens of thousands wend their way thither, and so British commerce has turned out to be that great lever which moves the world; the fulcrum made up of pluck and necessity, and all for the world's betterment. Loyal to the nation she governs, our QUEEN's great common-sense has helped forward the civilising mission of this country by every means ready to her hand; and so it has come to pass that men and women in far-off colonies look ever to these islands as to their home, and bless the gentle lady for her many years of endeavour to govern justly and well.

CRYSTAL PALACE FLOWER SHOW.—Amongst the many Jubilee celebrations, the floriculture of the period is not to be neglected, for the Crystal

Palace authorities will hold their Grand Flower Show on Wednesday and Thursday, June 23 and 24, in which the great feature will be a magnificent display of all the flowers and plants specially cultivated during the Victorian Era.

DEPTFORD PARK.—On White-Monday this seventeen acres of prettily-laid-out public park was declared open by Dr. COLLINS, as representing the London County Council, into whose care this fine open space has been given. Part of the old Evelyn estate, the new people's park, lies between the Lower Road and the Surrey Canal, and in our issue for November 16, 1895, will be found several illustrations and descriptions which will suffice to inform the reader in all matters relating to landscape-gardening, as adapted to the site. Surely some memorial might here be erected calculated to remind the little athletes who are certain to make the most of the newly-opened free space that here or herabouts the great Czar Peter used to dispute himself; that by the lawn facing the family mansion of EVELYN, who lodged the young Czar, this young gentleman destroyed the famous Holly-hedge in which EVELYN delighted, in order that he might have an easy instead of a roundabout or rut-triven road to the river, by the side of which he daily took instruction in the art of ship-building, as taught at Deptford. Surely the idea is well worth entertaining, especially in this year of Jubilee. A memorial of SILVA EVELYN would be even more appropriate.

NEWCASTLE AND DISTRICT HORTICULTURAL MUTUAL IMPROVEMENT SOCIETY.—The monthly meeting of this Society was held at their room, 25, Westgate Road, on Tuesday, June 8, with Mr. JOHN BUTLOCK in the chair. There was a moderate number of members present, and an excellent display of blooms and plants was made. A paper by Mr. E. SHERRATT, Ashburton Lodge, Gosforth, on Spiræas and Hydrangeas, and read in his absence by the chairman, contained many useful hints on the cultivation of these plants, and its reading was followed by discussion.

A RHODODENDRON SHOW is now being made in the gardens of the Royal Botanic Society in Regent's Park, by Messrs. JNO. WATERER & SONS, Bagshot Nurseries, Surrey. Though it is something like twenty-five years since Bagshot Rhododendrons have been exhibited at this place, previous to that time annual shows had been made there for more than a score of years. The site was originally prepared for a Rhododendron garden, and is very suitable to their display. It is more or less circular in shape, with numerous paths, and comparatively small geometrical beds, most of them having a border of grass around them. The surface of the ground has been left at differing levels, the centre probably being lowest, and the planting in the present instance has been done in such a manner that from any of the corners a view of the whole of the plants is gained. Few species of plants will permit of being transplanted a fortnight before the buds burst into blossom and suffer no check, but the Rhododendron makes a mass of fine close roots that efficiently hold the soil together. The present hot sunshine hurries the flowers past, however, more quickly than is desirable, notwithstanding the whole is covered by a nice tent. The task of maintaining a named collection of Rhododendrons is immense, for seedlings are raised so easily, and they so frequently have qualities equal to many of the named kinds, that incessant revision is imperative. Some of the old varieties nevertheless continue to remain the best in their class. The best of all that have been raised by Messrs. WATERER is probably the variety Pink Pearl that was exhibited recently at the Temple Show. It has flesh-coloured flowers of unusual size. This is not now in bloom, but of the same strain is Lady Clemantine Walsh, having large flowers, with white centre, delicately suffused with lilac-pink towards the margin, and green spotting upon upper petal. It produces a bold truss, and is said to be a good grower. G. Waterer,

with paler flowers than the preceding, may also be recommended. Francis B. Hayes has white flowers, marked very conspicuously with chocolate spots or blotches. Jno. Walter, a rich-crimson flowering variety. Mrs. Holford, salmon-crimson; and the older variety, Minnie, are good. Several seedlings that have been planted illustrate the good average quality obtained in them. The show will be continued for a fortnight or so longer.

—The neighbourhood of Hyde Park Corner has this season been gorged with Glend and Mollis Azaleas and Rhododendrons, supplied from Mr. ANTHONY WATERER'S Nurseries at Woking. It is the opinion of all who have seen them, that the present season has surpassed any others in the magnificence of their flowering. It may prove of practical interest to note the following as being amongst the best varieties of hybrid Rhododendrons, which stand on the grass between the carriage-road leading from Kensington to Hyde Park Corner and Rotten Row. A large specimen Barclayannum, deep rose-crimson; The Queen, pinkish-white, yellow blotch, close, compact truss; Everestianum, rosy-lilac, fringed, abundant bloom; Michael Waterer, one of the best, brightest scarlet-crimson, fine form and habit—very fine specimen plants; St. Simon, a beautiful rich purple-crimson spotted, standing near Albert Gate. In some beds may be noted splendid examples of Mr. W. E. Gladstone, a fine pink; John Waterer, intense glowing carmine, large, and of fine form; also a beautiful plant of Duchess of Connaught, one of the finest white varieties, extra large truss, with lemon blotches on the flower—very attractive. On the north side of Rotten Row are some large specimen plants. Here were noted Marchioness of Lansdowne, pale rose with a black spot—a most distinct and beautiful variety. As companion plants well worthy of mention are Kate Waterer, undoubtedly one of the most distinct and striking, rosy-crimson varieties, with a large yellow blotch; and Lady Grey Egerton, silvery bluish, and bearing a splendid truss. In beds are Sappho, white, distinctly blotched; Stella, pale rose; Snowflake, pure white; Lady Eleanor Cathcart, bright clear rose, with chocolate spots, fine truss—a showy variety; J. Marshall Brooks, a distinct and beautiful variety, handsome trusses of rich scarlet, with bronze eye. A bed planted with, Kalmia latifolia is a new departure; the plants make a good show.

THE GARDENERS' COMPANY.—At a meeting of the Court of the Gardeners' Company, held on Wednesday, Mr. N. N. SHERWOOD was re-elected master, and Sir WILLIAM FARMER and Mr. PHILIP CROWLEY elected upon and re-elected upon respectively for the ensuing year. Mr. WILLIAM GREY, lessee of the Lyric theatre, was admitted to the freedom and livery of the company, and afterwards elected a member of the court. The master's installation and the formal admission of Mr. GREY will take place (by permission) at the Vintners' Hall, on Tuesday, July 6, and will be followed by a banquet.

A BOTANICAL SOCIETY FOR WESTERN AUSTRALIA.—It is the intention of the friends of natural history in the Colony of Westralia to establish a society of botanists, which shall form a much-called-for bond of union among plant-lovers in this, the most beautifully fertile region of the Continent. The inaugural meeting was held in St. George's Hall, Perth, on May 4, 1897, under the presidency of E. H. WITTENOM, Esq., Minister of Education for the Colony. It was then decided to call the Society the Vol. Mueller Botanic Society. The following officers-bearers were elected:—Patron, His Excellency the Governor; President, Sir JOHN FORREST; Vice-Presidents, Messrs. E. H. WITTENOM and G. LEAKE; a committee, and as Secretary Mr. J. FOSTER SKRIBES. On the motion of Mr. BICKFORD, it was unanimously resolved—"That the assistance of the Government be solicited in the direction of a subsidy, by providing rooms, or in the direction of appointing a botanist who is qualified to identify and classify the flora and vegetation of Western Australia."

PARAFFIN-NAPHTHALIN EMULSION AS A PLANT INSECTICIDE.—One part of naphthalin is dissolved by heat in ten parts of paraffin oil. The solution is well shaken with a solution of thirty-three parts of soft soap in thirty-three parts of water at about 82° C. The emulsion thus obtained is very permanent, and fifteen parts of the same diluted with 1000 parts of water gives a very effective solution for destroying insects. *Pharm. Centralh.*, xxxvii, 242 (*Pharmaceutical Journal*).

MUNICIPAL FLORICULTURE.—It is stated that the Liverpool Borough Parks Committee have had a large number of window-boxes made, filled them with soil and plants, and then generously distributed them amongst the poor inhabitants of that great seaport. How very sensible and practical an act is this, and how admirably does it serve to florally commemorate the jubilee year. It is indeed to be hoped that such a kindly action may not only meet with ample reward, but full appreciation on the part of the poor town-recipients, but that also the action may be both perpetuated and extended. Parks and gardens committees, as a rule, now do very much to render the open spaces under their control at once beautiful and attractive. But the brightest of gardens still leaves the streets of the poor miserably dull and oppressive. To carry some, if ever so little, of the floral beauty of the garden into these gloomy and apparently God-forsaken thoroughfares is indeed a desirable as it is a kindly act. How strikingly does this practical proceeding at Liverpool compare with the poor effort at kindness made by our London Parks and Gardens authorities when they give away in the autumn the worthless plants that have done duty in their flower-beds all the summer. The poor will fetch them in great numbers, take them home and pot them, only to see them decline and die. Some day we may hope to see our municipal authorities everywhere not only supplying well-filled window boxes to their poor districts, but also giving small prizes later for those best attended to.

CARNATIONS AND PICOTEEES.—In the Tyrol, Italy, Spain, and South of France the people grow Carnations and Picotees as window-plants, or to hang down through the balustrades or iron-work of a balcony; but they never think of showing them off as we do by tying the flowers up with their faces turned to the sun. They just hang *négligé*, and look ever so much nicer. Probably if competitions were instituted, they would tie up the pretty blooms *à l'anglais*. When you look upwards towards a window or a balcony, the Carnation is face to face with you, and the flowers hanging their heads in this way are not so liable to be spoiled by rain and sunshine. We know how soon bright sunshine takes the colour out of the flower; and to make it all the harder for them, we plant them in beds exposed to the sunshine the whole day. Is it not just a little bit stupid?

THE GARDEN AT THE VICTORIAN ERA EXHIBITION.—We learn that in addition to the planting by Messrs. LAING, other portions of the gardens were planted by Messrs. WARE; and that the necessary alterations and improvements in the gardens generally have been made by Mr. W. HITCHCOCK, the head gardener, to whom much credit is due.

NEW CHALLENGE CUP.—The Croydon Horticultural Society has been successful in obtaining by special subscription a very handsome new cup, to replace the last, which was won outright in 1896 by the Rev. J. H. PEMBERTON, after having been in competition for nine years.

PELARGONIUMS AT LEWISHAM.—We had recently an opportunity of inspecting a capital show of Pelargoniums in the Rycroft Nursery of Mr. H. J. JONES, whose indefatigable energy is almost as observable in the culture of this class of plants as in Chrysanthemums. A Chrysanthemum nursery, where no other plants are cultivated, must necessarily experience a considerable amount of dull or quiet time in each year; and so Begonias, decorative zonal, and Ivy-leaved Pelargoniums, besides many other plants,

have been added to the Rycroft collection. Several pieces of land have been acquired during the past year, and a fortnight ago premises were secured on the High Road, Lewisham, for the purpose of commencing a florist's business. But to revert to the Pelargoniums, it need hardly be said that they were thoroughly well grown, nor is it surprising that the immense number of varieties the collection embraces belong chiefly to the decorative class, for these are most popular. Show Pelargoniums have come to be regarded as plants for exhibition only, and the demand for them is a very limited one. The decorative varieties are of robust growth, exceedingly free in flowering; they produce large trusses of gay flowers that literally hide the plant itself from view; and, moreover, if a person understands the general treatment they require,

decidedly worthy commendation, and has a capital truss and bloom. The lower petals are pink, marked occasionally with crimson, and the two upper ones nearly covered with a rich velvety-crimson flame. Mrs. F. Walker has flowers of white shaded lilac-rose, and dark crimson blotches. Claude Bernard, flowers white and pink; Albert Pratt, rose coloured, with dark crimson stripes and blotch; Eucharis, an almost white flower of sterling value, but possessing a pink spot or two upon each bloom; and Mrs. G. Gordon, pink and white, were all noteworthy. Mrs. W. Wright, Ladas, Royal Rose, and Lady Duff should also be mentioned. Looking through other houses where the zonal and Ivy-leaved Pelargoniums are, we were shown a novelty from a cross between Ivy-leaved Souvenir de Chas. Turner, and a white single-flowering zonal variety. This has



FIG. 153.—OAK PLANTED AT CHATSWORTH BY THE PRINCESS VICTORIA, IN 1832. (SEE P. 405.)

their cultivation is easy and inexpensive. But there are the Regal Pelargoniums, with semi-double blossoms, rather better if judged by the individual bloom than the single ones, but not quite so free as these, though they continue to throw trusses a longer time. These are fully as worth cultivation as are the decorative sorts. The plants were staged in one of Mr. JONES' large span-roofed houses, where the mass of bloom was overpowering in its abundance. The recent bright weather and hot sunshine was rapidly hurrying the flowers to maturity, and before these lines are read, the beauty of the show must have passed. It may be of interest to mention a few of the best varieties, but the selection must be a very exclusive one, and if the reason be asked, the reply is "Jubilee." Duchess of Portland is a new one, produces a large flower and fine truss, the ground colour of the flower is pale pink, with deep rosy blotch. Mrs. Graham is

been called Achievement. The flowers are large, semi-double, and salmon-pink, thus in point of colour being modified by its white-flowering parent.

YORK SHOW.—We learn with much concern that on the morning of the opening day a storm broke over the city of York, wrecking the exhibition, and causing irretrievable havoc among the horticultural exhibits of all kinds. Our correspondent, Mr. BAILEY WADDS, who was to have been one of the judges, sends us the following brief account of the catastrophe:—The best exhibition of Orchids, plants, flowers, and fruit ever brought together by the enterprising committee of the York Gala was destroyed by a furious gale this morning (Wednesday, 16th inst.), six large tents containing the exhibits of the best growers in the country were blown down one after the other, just as the judges were about to commence their

work. The destruction and damage to the beautiful plants and fruit was saddening to behold, and the scene was one not likely to be forgotten by those who witnessed it. The executive, as well as the exhibitors, whose productions have suffered so much injury will, I am sure, have the sympathy and support of everyone in the difficult situation in which they are placed. A meeting of the committee was held under the presidency of the Lord Mayor, and it was resolved that the exhibits should be removed, but that the gala so far as possible should proceed, the admission to the field to be reduced to 1s. before 6 o'clock,

"QUEEN'S TREES."

IN olden times, long before forestry was promoted to the rank of a science, Mary, the ill-fated Queen of Scots, was an assiduous planter. In most of the old Scottish domains may be seen a tree or trees, the planting of which is attributed to her. The tradition may be true—but if so, the Queen's industry must have been remarkable, and the longevity of the trees noteworthy.

A word of caution may appropriately be given in this Jubilee year, when planting of this kind is likely to be done: first, to prepare the tree beforehand; second, to spare no pains in preparing the soil and planting the tree. It is needless to say that the tree selected should be one suitable to the climate, soil, and aspect. A handsome Beech or Oak is preferable to a Conifer, which may prove out of harmony with the surroundings, and speedily become shabby. There is no room for experiment in the planting of memorial trees, and for patriotic reasons some British tree—an Oak or a Scots Fir—should be chosen. On other occasions we may utilise the Douglas Fir, Lobbs' Thuya (= *T. plicata*, true), *Abies brachyphylla*, *A. Nordmanniana*, *Tsuga Mertensiana*, evergreen Oaks, Turkey Oaks, and many others.

WINDSOR.

A Cedar planted on the slopes of Windsor Castle in 1840, very shortly after Her Majesty's marriage, is one of the earliest of which we have any record. It is a flourishing tree, and likely to excite the curiosity of our successors for generations to come.

There are many other commemorative trees planted by Her Majesty in the domains at Windsor, such as a Deodar Cedar previously figured by us, but of which we have no definite particulars as to date of planting, or dimensions, and of which we may therefore merely record the existence.

OSBORNE.

Abies Pinsapo, planted on the occasion of Her Majesty's birthday, on May 24, 1849, has now a circumference of 7 feet 9 inches at 1 foot from the ground, and is 45 feet in height (see fig. 157).

Cupressus macrocarpa (*Lambertiana*), planted near the Swiss Cottage on February 10, 1862, has a circumference of 6 feet 6 inches, and a height of about 60 feet.

Another plant of the same species, planted on the garden lawn on May 24, 1855, is about 35 feet high, and is very spreading.

A *Cryptomeria Lobbi* was planted on May 24, 1857; a *Sequoia gigantea* (*Wellingtonia*) on the same day in 1858; and a *Cupressus Lawsoniana* in 1860.

Abies grandis was planted in honour of the christening of H.R.H. Prince Emich, of Leiningen, on February 10, 1866; and *Abies Nordmanniana* on the same day in 1869; and *Cupressus* (*Retinospora*) *squarrosa* on the same day in 1871.

Tuja dolabrata was planted by Her Majesty the Queen in memory of Emperor Napoleon III., on the day of his funeral, January 15, 1873.

A plant of *Abies lasiocarpa* is commemorative of the Silver Wedding-day of the Crown Prince and Princess of Germany, January 25, 1883.

Abies grandis, planted on Her Majesty's seventieth birthday in 1889, is one of the more recent commemorative trees that owe their present position to her hand.

Many of the above-mentioned trees have made but indifferent progress, and the *Cupressus macrocarpa* seems to thrive best of any.

CHATSWORTH.

At Chatsworth is an Oak with an interesting history (see fig. 155, p. 404). It was planted in 1832 by the Princess Victoria, when visiting Chatsworth with the Duchess of Kent. It is a healthy tree, planted in a hollow on the north side of the West Terrace, not far from the great fountain; and close by is a Spanish Chestnut planted by the Duchess of Kent, and at a later period a Sycamore by the Prince Consort.

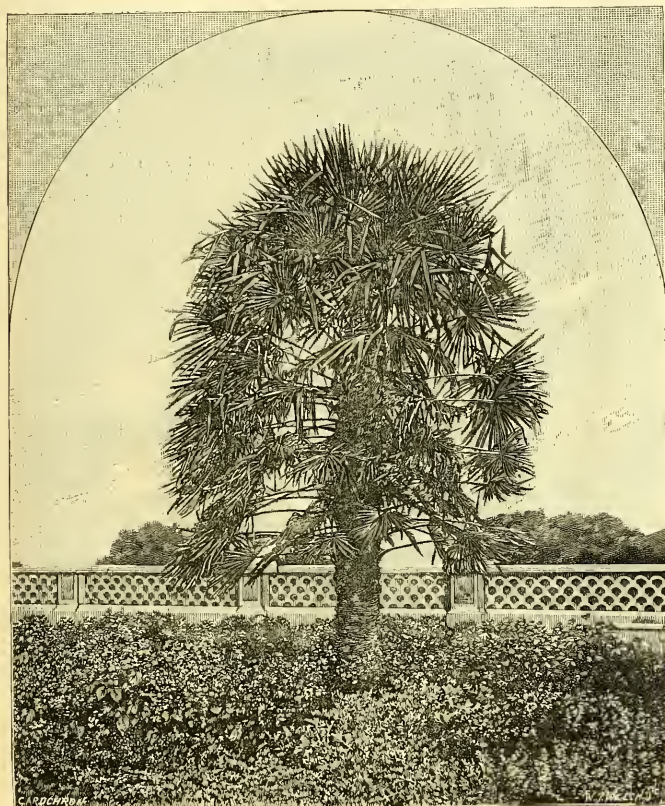


FIG. 156.—*TRACHYCARPUS (CHAMÆROPS) FORTUNEI*, IN THE QUEEN'S GARDEN, AT OSBORNE.
(SEE P. 396.)

and 6d. afterwards, these being half-price. Posters were also issued announcing that no flower-show would be held, and the committee thus were faithful to the public, who were, however, informed that they would be admitted at half-price. The show of flowers is, of course, to the visitors on the first day the chief attraction of the gala, but there are several other items in the varied programme which afford a large amount of interest.

PUBLICATIONS RECEIVED.—*The Fertility of the Land*, by J. P. ROBERTS (MACMILLAN & Co.).—*Clay's Successful Gardening*.—*The New Trees of Great Britain*, by JOHN LOWE, M.D. (MACMILLAN & Co.).—*First Report of the Western Experimental Fruit Farm*.—*Journal of the Kew Guild*.

In Mary's time there was no *Gardeners' Chronicle* to record these matters, but the occurrence of the sixtieth anniversary of Her Majesty's auspicious reign induced us to collect some authentic particulars relating to trees known to have been planted by the Queen. Many of these are in Scotland, and commemorate happy days passed north of the Tweed. To many of the gardeners and foresters we are under obligations, and in particular to Mr. Malcolm Dunn, who has greatly helped us in our investigations. We do not suppose the list is in any way complete, but in any case it is interesting to loyal Britons, and not without use to foresters.

TAYMOUTH.

On the occasion of their visit to the Marquis of Breadalbane in September, 1842, the Queen and the Prince each planted two trees, a Scots Pine and an Oak. The fact is mentioned under date of September 10, 1842, in *Leaves from the Journal of our Life in the Highlands*, small edition, p. 19: "Each of us planted two trees, a Fir and an Oak."

It is interesting to have the dimensions of these trees taken on April 17, 1897, and obligingly communicated to us by W. Dunn, Esq., the factor to the Breadalbane estate:—

THE QUEEN'S TREES.

Oak.—The length of bole to fork is 13½ feet; it then branches off in two limbs. The circumference at ground 6 feet 10 inches; at the height of 5 feet it measures 6 feet 2 inches; total height from the ground to the top of the highest branch 40 feet; the spread of branches 44 feet.

Scots Fir.—Circumference at ground is 7 feet 6 inches, at 5 feet up 6 feet 3 inches, from ground to first branches 9 feet, total height 55 feet, spread of branches 23 feet.

PRINCE ALBERT'S TREES.

Oak.—Length of bole to fork is 8 feet 3 inches, at this height it branches off into 4 branches, one of which was broken off by a snow-storm a good many years ago; girth at ground 7 feet 3 inches, at 5 feet up 5 feet 9 inches, total height 45 feet, spread of branches 54 feet. This tree was a good deal rent in the bole at the time the branch was broken off.

Scots Fir.—Circumference at surface 6 feet 5 inches, at 5 feet up 5 feet 4 inches, from ground to first branches 9 feet, spread of branches 33 feet, total height 40 feet. The above measurements were taken on April 17, 1897. *Wm. Dunn, Mains of Kennore.*

DRUMMOND CASTLE.

A few days after leaving Taymouth in 1842 the Royal party visited Drummond Castle, of the garden of which Her Majesty remarks that "it is really very fine with terraces like an old French garden," (*Leaves*, &c., p. 22) see *Gardeners' Chronicle*, May 26, 1877. Here also the Queen planted a purple Beech. This tree, as we learn from Mr. Robb, is now about 50 feet in height with 9 feet of clear stem, and 7 feet in circumference at 3 feet from the root.

BLAIR ATHOLE.

In September, 1844, Her Majesty records her stay in this picturesque spot, and previously to leaving "the dear hills" on October 1, she planted two Oaks, of which the present dimensions according to Mr. Keir are—

No. 1.—Entire height of tree 61 feet 6 inches spread of branches 26 feet 6 inches, length of clear bole 15 feet 6 inches, girth at 3 feet up 5 feet ½ inch, girth at 15 feet up 4 feet 2½ inches. No. 2.—Entire height of tree 49 feet 3 inches, spread of branches 48 feet, length of clear bole 11 feet 3 inches, girth at 3 feet up 5 feet ½ inches, girth at 11 feet up 4 feet 8 inches. The two trees are the common British Oak, growing side by side on light loam, sub-soil gravel resting on lime.

ARDVERIKIE (INVERNESS).

At this place, in 1847, the Queen planted a Scots Fir and the Prince a Larch, immediately to the west of the house. The trees go by the name of the Queen's and of the Prince Consort's trees. The Queen mentions her visit to the place, August 21, 1847:—"The country is very fine, but the weather most dreadful." *Leaves*, p. 57. Unfortunately, the trees were planted on a spot with very light soil on a hard pan; besides that, from 1850, when the late Marquess of Abercorn ceased to be the tenant of Ardverikie, until 1870, when the forest came into the possession of the present proprietor, Sir John W. Ramsden, Bart., the place was much neglected. The trees were left unprotected,

and were seriously injured by cattle and deer. Since 1870, every possible care has been taken of the trees, and fresh soil has been supplied to their roots; and they have, in consequence, made fair progress during the last twenty-seven years, though it is to be feared they will never entirely recover from the injuries received during the previous twenty years of neglect. Still, they look healthy, and are growing side by side, and are likely to keep growing for generations to come. The size of the trees does not correspond with the number of years since they were planted, owing to the causes I have mentioned. The Scots Fir at 5 feet from the ground has a girth of 3 feet 7 inches, its height is approximately 40 feet. The Larch is 47 feet in height. *Angus Macpherson.*

HADDO HOUSE.

Visitors to the Conifer Congress will remember the splendid examples of tree-growth sent from that estate. A Wellingtonia, planted by Her Majesty in October, 1857, has now the following dimensions:—

Sequoia gigantea (Wellingtonia), planted at Haddo House by Queen Victoria, October, 1857. Height of tree, 60 feet; girth of stem 1 foot from ground, 11 feet 6 inches; at 5 feet from ground, 9 feet; circumference of branches at ground, 75 feet. The tree is healthy and symmetrical, and stands about 50 yards to the east of Haddo House. It has a granite tablet in front with the inscription, "Planted by Queen Victoria in 1857." Another Wellingtonia was planted at the same time by the Prince Consort. The dimensions of it are almost identical with the Queen's tree. It has also a granite tablet in front stating that it was "planted by the Prince Consort in 1857." *J. Forrest, The Gardens, Haddo House.*

BALMORAL (ABERDEENSHIRE).

Mr. Michie obligingly forwards us the following tabular statement of trees planted by Her Majesty the Queen (personally) on the estate of Balmoral:—

Name of Tree.	Date of Planting.	Occasion when Planted.	Approximate Size.		Remarks.	
			Height.	Girth above spread of roots.		
			Ft. Ins.	Ft. Ins.		
<i>Acer Pseudo-Platanus</i> ...	10th May, 1862	Not stated.	29	0	2 1	
<i>Acer Pseudo-Platanus</i> ...	10th May, 1862	For H.R.H. the Prince Consort.	29	0	2 6	These two Sycamores have been planted in very poor gravelly soil, and are exposed to northern high storms. They bear a garbled appearance.
<i>Abies Albertiana</i> (Taiga Mertensiana)	4th Oct., 1865	Not stated.	37	0	4 6	Quite healthy and clothed to the ground.
<i>Abies nobilis</i> ...	24th May, 1869	On 50th anniversary of Birthday.	35	0	5 3	Do.
<i>Abies nobilis</i> ...	20th Sept., 1873	In recollection of Princess Hohenlohe.	14	0	2 7	Do.
<i>Abies nobilis</i> ...	26th May, 1876	In recollection of the infant Prince Harold.	22	0	3 2	Young shoots frequently cut back by summer frosts.
<i>Cupressus Lawsoniana</i> ...	20th June, 1877	In commemoration of 40th year of Accession.	12	0	...	This tree takes shrub form. Spread of branches, 30 feet circumference.
<i>Abies nobilis</i> ...	24th May, 1879	On 60th anniversary of Birthday.	29	6	2 7	Do.
<i>Abies nobilis</i> ...	21th Nov., 1879	Not stated.	25	0	3 8	Frequently nipped by summer frosts.
<i>Pinus Cembra</i>	13th June, 1887	For Jubilee Day, 21st June, 1887.	13	0	1 4	Healthy and doing well.
* <i>Pinus Cembra</i> ..	24th May, 1889	On 70th anniversary of Birthday.	8	6	1 0	Do.
Weeping Willow (Kilmarnock)	19th June, 1890	In memory of the Dowager Marquessess of Ely.	6	0	0	Do.

* This tree was not planted by the Queen herself, she being at the time at Windsor.

The soil in which all of them are planted is poor and gravelly, while the altitude is about 900 feet above sea level, and exposure north and west. Of all exotic conifers I find the *Pinus Cembra* thrives best

EDINBURGH.

A group of four trees was planted by members of the Royal Family in the grounds in front of the main entrance to the International Exhibition, held

under the above conditions. It matures its young wood and seeds, from which I have raised quantities of plants. *John Michie.*

DUNKELD.

In the pleasure-grounds at Dunkeld is a specimen of *Cedrus atlantica*, planted by the Queen, October 13, 1865; its height is now 32 feet, circumference at 1 foot from ground 5 feet 4 inches, as reported by Mr. Fairgrieve.

FLOORS CASTLE (ROXBURGHSHIRE).

At Floors there is a Wellingtonia (*Sequoia gigantea*) planted by Her Majesty in August, 1867, the present dimensions of which, according to Mr. Street, are height 57 feet; 10 feet in circumference at 1 foot from the ground; 6 feet in girth at 5 feet from the ground; the branches measure 12 feet from the stem.

INVERARY CASTLE (ARGYLL).

Here are a Silver Fir and a Lebanon Cedar, both planted on the same date. Mr. Taylor obligingly furnishes the following particulars:—

Silver Fir planted by the Queen, September 27, 1875, height about 33 feet; girth 5 feet up, 2 feet 6½ inches; diameter of spread of branches, 19 feet. The tree is in very good health.

Cedar of Lebanon, planted on the same date as the Silver Fir. Height 10 feet; girth 2 feet up, 1 foot 6 inches; diameter of spread of branches, 12 feet. This tree has had the misfortune to lose its leader often, therefore it is just a mere bush, but in rather better health than it was, and making more growth. *G. Taylor.*

BROXMOUTH PARK (HADDINGTON).

A Deodar (*Cedrus Deodar*) was planted here by the Queen on the 26th August, 1878, and did well till the top was broken off by a strong north-easterly gale; but Mr. Taylor informs us that it is growing away quite freely, its height is now 15 feet, diameter of branches 15 feet, girth of the stem at 5 feet from the ground is 22 inches.

in the West Meadows Park, at Edinburgh, in 1886. The central tree of the group, a Scots Elm, was, according to the inscription on the label at the foot of the tree—

“Planted in the Name
and Presence of
H.M. Queen Victoria,
By the Marquis of Lothian,
19th August, 1886.”

The Queen's tree is doing fairly well in the smoke-laden atmosphere, and gives promise of growing into a nice specimen in course of time. It is about 10 feet in height, with a clean stem of about 5 feet, and a nicely branching head; the stem girth being 9 inches at 3 feet from the ground.

On the 14th of October the Prince and Princess of Wales each planted a “Plane-tree” (*unguis Sycamore*), in the group, both of which are about 12 feet high and thriving well, considering their position and the vitiated atmosphere of the place.

Prince Albert Victor opened the exhibition on the 6th of May, 1886, and on the same day planted the first tree of the group, an English Elm, which is now about 10 feet high, on a clean stem of about 5 feet and thriving fairly well. *Malcolm Dunn, May 26, 1897.*

ORCHID NOTES AND GLEANINGS.

HABENARIA ELLIOTTI, A. Rolfe.

HABENARIAS, with the exception of a very few species, are not in fashion, and are not in great favour among horticulturists. Even the gardeners of botanical institutes are not fond of them, owing to the difficulties real, or perhaps only assumed, that are found in growing them. In consequence of this, the fact of flowering any *Habenaria* is very seldom recorded in the *Gardeners' Chronicle*, or the botanical periodicals. To-day we are surprised by the flowering of a species of quite recent date, it only having been known to botanists for a space of about ten years. The plant was discovered in Madagascar by Mr. F. Scott Elliot; specimens of the plant were described and named by Mr. R. A. Rolfe of Kew; and afterwards, a description founded upon these materials, was published in the *Monograph of Habenaria* in Engler's *Jahrbüchern*, 1891, p. 70. The plant was afterwards collected by our late friend, Mr. Johannes Braun, who died at Antananarivo. He succeeded in digging out some specimens without injuring the very tender roots; the package was then sent to Europe, but before it arrived the unfortunate collector had died. The whole stock was then purchased by Mr. Wendland, of Herrenhausen, and under his skilful treatment many of the plants were brought to perfection and flowering.

The plant is no great beauty after all, as *Habenarias* seldom are, but the spike of about 30 cm. (rather less than 1 foot) in length, bearing about 70 flowers, all opening at one time, it has a nice effect. The foliage is luxuriant; there are ten to twelve strong, bright green, lanceolate leaves around the thick, strong stem, and a group of about four to five specimens flowering at the same time, as we learn that they do to-day at Herrenhausen, is, at any rate, by no means inferior to a bunch of our European *Platanthera bifolia* or *P. chlorantha*, two species with which *Habenaria Elliotti* agrees also in the aroma of the flowers. The flowers are of the very peculiar structure characteristic of the true *Habenaria*, i.e., three sepals of a green colour, two petals deeply cleft, a lip also cleft to the very base into three narrow linear lobes, and lastly a long, thin spur; all of this, and the thin whitish leaflets, eight on each flower, twisted and whorled in the whole length of the spike, afford an object as striking as those we are accustomed to see in *Bolophyllum* for instance, with movable lips and hairs, or in the grotesque *Catasetums*. It is not for their beauty that the *Catasetums* and many other plants of this kind are admired; but for the wonderful apparatus of the flowers for securing fertilisation by insect agency. If we admit this proposition, we must also admit

that very often a greater charm is to be expected from inconspicuous flowers of those plants which at the present possess botanical interest only, than from the most splendid *Lælas* or *Cattleyas*, the interior construction of which is a comparatively simple. The plant in question, on arrival in Europe, was very weak, but it has been brought to a healthy and vigorous condition, and flowered this year for the first time. I believe the time is not far distant when the old dislike of terrestrial Orchids will disappear, and that they will be more generally cultivated. Gardeners may object that none of them is fit to become a trade Orchid, or one suitable for table decorations; but *Mastveallias*, for instance, in the majority of species, are in favour with amateur cultivators, notwithstanding that only a few of them are what are called “ornamental plants.” At any rate, botanists will mark in their almanacs the day when they had the opportunity of studying living specimens of a plant known only until this day by dried specimens; and gardeners will, perhaps,



FIG. 157.—ARIES FINSAFF.
(Planted at Osborne by H.M. The Queen on the anniversary of her Birth-day, May 24, 1889. Present height, 45 feet.)
(See p. 495.)

look to the future with some hopes of having interesting plants in cultivation when the species now so much grown are no longer in fashion. *F. Kraenlin.*

HOME CORRESPONDENCE.

ENGLAND'S FLORAL EMBLEM FOR JUBILEE DAY.—Since the receipt of a letter from the Very Rev. the Dean of Rochester, Dr. Hole, sympathising with my suggestion that the Rose should be worn by everyone on Jubilee Day, hundreds of communications have reached me to the same effect. This is “the month of Roses,” and after the refreshing rains we have recently had, there will be an abundance of Roses for the eventful day. Their beauty and fragrance will be very welcome. In the times of the early Kings of France, *Chambers's Book of Days* informs us “The Parliament, placed between Royalty and the Church, formed one of the great powers of the State. The Kings felt a real esteem and respect for the judiciary body, and regularly attended its sittings; besides, it was not always stationary in Paris, but made an annual

tour, when Princes and Princesses of Royal blood were accustomed to follow its laborious peregrinations, and thus add to the brilliance and pomp of its meetings. It was in 1227, during one of these judicial pilgrimages, that the custom called “The Tribute of Roses” was founded, one of the most charming of which the Parliamentary sittings speak. The ceremony was created by a woman and for a woman, by a powerful and illustrious queen for the wise and lovely daughter of the first President of the first Parliament of Paris, and possesses at the same time the majesty of all that comes from a throne and the grace of all that comes from a woman.” It would be most appropriate that in all future years, a day in June should be set apart in this country as a national holiday and “Commemoration day” of our Queen's Diamond Jubilee, when “The Tribute of Roses” might form one of the leading features of the occasion, and be popularly known as the “Royal Rose Day.” *Ellis Lever, Colwyn Bay, June 15.*

THE RENAISSANCE OF THE HOLLYHOCK.—Your correspondent, “R. M.,” may be assured that I am well aware of the subtlety and power of the dangerous enemy with which we have to contend. Neither have I much hope of ever getting entirely free of the disease that has laid low our Hollyhocks. But I think we may, and can, by means of cool treatment and judicious cultivation, invigorate the constitution of the Hollyhock to such an extent that the Puccinia will not penetrate the tissues, but will fall harmlessly from the plants. This is just what is being done with the equally if not more insidious Potato disease. Messrs. Findley, Sutton, and others, have furnished their seedlings with a vital force and vigour that resist the disease, while also in the process doubling or trebling the average yield of less than 7 tons per acre, while also improving the quality. Why should not “R. M.,” and other Hollyhock growers, and all of us, go and do likewise with those plants, and possess ourselves in the hope that we may yet have to heighten our step-ladders, and strengthen our stakes for our old favourites? One point of culture was much more carefully attended to by the older gardeners than by those of the present day, namely, the early and severe thinning of the flower-buds, especially on the doubles, thus allowing each to develop to its full extent without trussing. I am pleased also to verify your correspondent's remarks about the superior quality of Scottish *Violas* and *Pansies*, and the products of the growers of forty or more years ago. But the drought in the south and east of England is against *Violas* and *Pansies* reaching to the high standard of the north. *D. T. F.*

EARLY-FLOWERING STRAWBERRIES.—Would “D. T. F.” be surprised to learn that Strawberry-plants were in bloom in the south of London nearly a month earlier than were Mr. Carruthers's in Scotland! Then why in extolling the leaf habits of that raiser's new varieties, seem to disparage the usefulness of such a fine variety as Royal Sovereign, with respect to the strong leafage, of which not one of the several thousands of growers, who now pronounce it to be the finest recent acquisition to Strawberries, make complaint. As to its cropping qualities, it is a libel to hint the plants have more leaves than fruits. As to habit, if that be so great a feature in pot-plants, Veitch's *Perfection*—that superbly-favoured new variety from British Queen and Waterloo—should satisfy the most exacting. The foliage is medium and curled, the blooms very abundant. *A.*

JANÆA HELDREICHI.—Mr. Arthur K. Bulley has had the fortunate idea and opportunity to afford to this very capricious plant just the conditions under which it grows in its home. Solid oblique rocks are covered by mossy hillocks, having underneath 2 to 3 inches of vegetable mould, and between the rock and the underside of these bolsters, humidity and water works its way down during a great part of the year. In winter they are deeply covered by snow, which disappears late in the spring, and in summer they never get completely dry, the small canon or creek always having moist air. They grow as well on the shady as on the sunny side, but the plants on the shady side, though bigger, are less floriferous. *Max Leicklin, Baden-Baden.*

REDUCING THE HEIGHT OF TALL TREEFERNS.—The process given in your late issue is clumsy, unsightly, and unnecessary. We have a large *Alsophila Moorei*, which grew too tall for our conservatory, many years ago. It is planted in a box 20 inches deep, and every second year we take it out, and cut about 12 inches off the bottom with a sharp spade, dropping it to the bottom of the box,

and filling up with fresh soil. There is no check visible after this severe treatment, and it grows as luxuriantly as ever. In its native country this Fern may be cut off at any part of the stem, and the upper part stuck in the ground, where it will root at once, and grow on as well as if it had not been touched. This can readily be understood, the stem being simply covered with a mass of roots already formed, which grow with the slightest encouragement. *Thos. Fletcher, Grappenhall, Cheshire.*

OLEARIA STELLULATA.—Should this latest addition to these charming Olive-like shrubs, so well-staged by Messrs. Veitch at the Temple Show, and illustrated on p. 351 of the *Gardeners' Chronicle* recently, prove as easily grown, floriferous, and hardy as the *Olearia Haseti*, it will, doubtless, have a great and popular future career before it in our gardens. It will therefore prove of special interest for indooring planters to know if the plants exhibited in full flower in May were from the open ground, or had been at all forwarded in a greenhouse. Having recently seen several specimens of the pretty New Zealand *Olearia Haasti* in different conditions of shelter and exposure, specially in such bleak gardens as that at Castleroy, Broughty Ferry, it would be interesting to learn whether the new comer is likely to prove equally hardy. Also, whether anyone has proved any of the older species as hardy and as useful as *O. Haasti*? If not, not a few cultivators have found such species as *O. Gunniana* very useful for the cool greenhouse; the clothing of warm walls, or furnishing sheltered corners with a mere fringe of bracken fronds thrown over it in severe weather. *D. T. F.*

MELON WINDSOR CASTLE.—This fine variety is this season better than usual, the fruit being larger and finer flavoured. Of four fruits on one plant, the smallest weighed 8½ lb., and the largest 10½ lb. This will show that a large amount of nourishment is required to keep fruiting plants going. Of all the green-fleshed varieties that have come under my notice, none has surpassed this for size or good quality. It is, however, not an early-fruiter, and when grown in a mixed variety, it should be planted at one end by itself, so that it may receive the proper kind of cultivation till the fruits ripen. When mixed with early varieties, it or they suffer, as it is not possible to give to each the required treatment. *H. C. P.*

COMMEMORATIVE TREES.—I hope that those who are thinking of planting such trees will choose such as are likely to be "trees of the future." It is deplorable to see so many wretched specimens of commemorative trees about the country, simply because the kinds have been ill-chosen. It seems to me that gardeners are asked to get the trees, and they get in most cases Conifers of doubtful suitability for this country, and certainly Lot trees that will mark time a century hence. Out of a large group of "Royal" trees I saw the other day the only thriving trees were Cedar of Lebanon, Abies brachyphylla, and Picea pungens; the rest were Abies nobilis (grafted and "gouty"), Nordmann's Fir, Cryptomeria, Deodar, Douglas Fir, and Retinospora! all merely existing in the cold clays of the Midlands. Unfortunately the planting of these "Royal" and other commemorative trees takes place generally in the summer, but there are at least a dozen Conifers besides evergreen Oaks, &c., that are beyond suspicion. But the real commemorative trees are the large deciduous trees about which there is no doubt that generations to come will be able to sit under their shadow at the end of the next century. Better plant one acorn of an English Oak than a whole grove of aliens of unproved adaptability to the climate of these islands. *W. Goldring.*

THE RECENT TEMPLE SHOW.—I cannot help thinking that in making the awards at the Temple Show, a great want of consistency was shown in several of them. For instance, Silver Cups, it would seem, were awarded to mere quantity quite apart from quality—which is a very questionable precedent to set up. Take the case of a collection of herbaceous plants shown by one firm. If one half of this collection had been placed under the tables instead of on the top of them, the show would not have been one whit the poorer for the loss of it; and many of the bunches of faded dull-coloured Iris might have been omitted with decided advantage. What effect was gained by the bundling up together of weedy-looking bunches of common garden-flowers which everyone knows, and which were neither instructive nor interesting? Then there were the poor bunches of Cactus and decorative Dahlias, unnaturally forced into bloom,

and forming an indifferent representation of good varieties, actually discounting their value. Who wastes forced Dahlias in May? Then a huge panel of sprays of Violets, which quickly fade, had nothing about it novel or striking, and yet a Silver Cup was awarded to each of these exhibits, placing them in the front rank of excellence, and on a level with Turner's Roses, and Mr. Melrose's magnificent collection of fruit. A group of new Holland plants from Messrs. Balchin & Sons of Hassocks, was degraded by being relegated to the fifth class of value. Surely those who gave this unique and admirably grown and bloomed collection, the award of a Silver-gilt Banksian Medal, the lowest in value of the Silver-gilt Medals of the society, could have known but very little about such plants. The very smallest among them was relatively a perfect specimen, and there was nothing probably which had had less than three years' culture. Fancy placing such admirably grown specimens of Darwinia tulipifera and Erica Spenceriana on a level with cockney rockwork, faded border flowers, and immature Cactus Dahlias the former require the greatest skill to cultivate, the latter none at all. I indulge in this growl with considerable reluctance, but it is forced from me by what I consider glaring inconsistency in the awards made at the Temple Show. *A Fellow.*

PLANTS OF THE QUEEN.—To the list of plants named after Her Majesty the Queen, at p. 334, I should like to add Cineraria The Queen, and Cucumber Empress of India. Both were raised at the Exeter Nursery, and distributed early in the eighties by the late Dr. Wm. Robt. Woodman, when trading as Lucombe, Pines & Co. The former was a magnificent variety, rich purple-crimson with white centre, of great substance, the individual flowers as large as crown pieces, and the variety was chosen from a new strain of Cinerarias known as the Wonder of the West strain by the doctor, and named by him. The Cucumber Empress of India was a fine white-spined variety of use for summer cultivation. The fruits averaged 20 to 24 inches in length, and the variety was awarded a Certificate by the Royal Western Horticultural Society, and it became popular in west country gardens. *W. Napper, Royal Ashburham Park Nursery, Chelsea.*

DARWIN TULIPS.—The correspondent who started the theory that this race of fine Tulips was raised by Mr. Krelage, did so without the slightest foundation or authority. The history is described at length by me in the *Gardeners' Chronicle* of April 7, 1891, my facts having been obtained direct from my excellent friend, Mr. Krelage. These Tulips are of Flemish origin, and originated from seeds sown between 1860 and 1872, from the best breeders and broken strains. The entire stock was bought from the raiser by Mr. Krelage, and when the stock had been considerably multiplied, by him, distributed. If writers would only take a little more care to verify their "facts" before making reckless statements, they would cease to propagate a considerable number of absurd rumours. *W. Roberts, Carlton Villa, Klea Avenue, Clapham, S.W.*

—Is not "F. W. B.'s" criticism on these Tulips, at p. 372, a little captious, seeing that the error in my previous note on which he comments was in making Mr. Krelage the raiser, when I should have said that he put them into commerce. But "F. W. B." with that habit which is getting rather unpleasantly characteristic of the modern writer, whilst giving utterance to a growl in the *Gardeners' Chronicle*, at once rushes into the columns of a contemporary to show my appalling ignorance. Does it not seem as if ordinary courtesy should have led him to have embodied his explanatory remarks in the note sent to the *Gardeners' Chronicle* rather than to have made them the vehicle of a note in the pages of a contemporary, the readers of which must have wondered at what "F. W. B." was driving. My object in penning the note was to dispel a very common illusion, that these Tulips were so named because raised by Mr. Darwin, whereas they are merely so named out of compliment to the great naturalist. It may be right to refer to them as breeder Tulips, although they rarely break; but call them by what name you may, they are singularly constant in their self-colours, and are also as wonderfully beautiful. It has been said that they are in the majority of dull hues. Surely that is an error. As seen at Long Ditton recently, they were generally as brilliant as beautiful. As to their not being "evolved" if not, then are they all natural species? Certainly

not. Every garden variety has been more or less "evolved." *X.*

ROSES OF THE VICTORIAN ERA.—I was surprised to find that the splendid and well-known results of the efforts of Messrs. William Paul & Son, of Waltham Cross, and Messrs. Paul & Son, of Cheshunt, were almost entirely ignored in the article at p. 377. I will give a list of the more notable varieties sent out by the two firms mentioned above, and I opine that a glance at this list will tend to prove that "Wild Rose" has omitted to mention several sterling varieties of the Victorian Era that are met with not only in every exhibition-box, but what is far better, in every garden where Roses are grown for their decorative qualities. Messrs. William Paul & Son, of Waltham Cross, have enriched our collection of Roses with such superb varieties as:—

Beauty of Waltham.	Lord Meaulny.
Black Prince.	Magna Charta.
Charles Lamb.	Marchioness of Lorne.
Clio.	Medea.
Corina.	Pink Rover.
Crimson Globe (Moss).	Pride of Waltham.
Crimson Queen.	Queen Mab.
Crown Prince.	Queen of Queens.
Duchess of Albany.	Sulamander.
Duke of Albany.	Sappho.
Duke of York.	Spenser.
Ella Gordon.	Star of Waltham.
Empress Alexandra of Russia.	Sulphur.
Eucharist.	Waltham Climber.
Lord Bacon.	White Lady.
Little Gem.	And many others.

In addition, this firm has introduced varieties of other raisers, such as Danmark, Duchess of Bedford, Countess of Rosebery, &c. Among the many beautiful varieties sent out by Messrs. Paul & Son, of Cheshunt, we find such names as—

Carmine Pillar.	Glorie of Cheshunt.
Charles Gther.	Madame Norman Neruda.
Cheshunt Hybrid.	Mrs. Paul.
Dowager Duchess of Marlborough.	Paul's Single White.
Duke of Connaught.	Queen of Autumn.
Duke of Teck.	S. Reynolds Hotel.
	Sultan of Zambiar, &c.

"Wild Rose" says: "It seems as if France has done all she can for us." Now I would be the last to depreciate the grand efforts of my own countrymen, and I believe they now take the lead in the van of progress; but I should not like to make such a statement as "Wild Rose" makes. If he had seen, as I have seen, some of the beautiful novelties emanating from our Gallic neighbours this season and last season, I think he would not have made such a sweeping assertion. *W. Estlin, Waltham Cross.*

CELEBRATING THE JUBILEE.—There are many different ways of marking the Diamond Jubilee among trading firms and by private employers, and I would like to let your readers know what is the Hon. E. W. B. Portman's manner of doing this. The family is going from home, and instructions have been given that all employes on his Hestercombe estate, indoors and out, are to be paid one week's wages as a gift, which has been done. I trust that many other employers of labour may mark the joyous event by doing likewise. *A. J. Keen.*

WORTHING PUBLIC PARK.

SITUATED in the north-east of the town, this park has been in existence for some years. It was not always particularly attractive from a horticultural standpoint, but thanks to the present superintendent, Mr. C. Evans, it is now a charming public garden. Taken as a whole, it is pleasantly diversified, embracing within its limits a fine level cricket-ground, some artificially raised mounds, a good tennis-court, open and earthy walks, and a shapely little lake with its islands, rustic bridge, and other picturesque accessories. Surrounding the park we have a wealth of handsome foliage, on well-grown Sycamores, Elms, Limes, Ash, Horn Oak, and other trees. Entering the park by the main gate in Park Road, we saw recently a long curved bed, bordering the main path, containing some 200 to 300 Wallflowers of a fine dark crimson variety, and a delicate white Alyssum (Madwort) make up a good border, while immediately succeeding this there was a grand show of Cleveland blue Pansies. On our right, opposite this border, we noticed a heart-shaped bed surrounding a giant *Eucynimus*. Here a border of Thrift was succeeded by masses of delicately tinted *Aubretia*, Pansies, Arabis, Tulips, and Wallflowers.

Taking the path to our right, we have on our side

a circular lawn, surrounded by Horse-Chestnuts and Limes, dotted here and there with well-trimmed Hawthorns. On our left, an untidy waste has been converted into a most tastefully laid-out garden. A shelter seat—not of any intrinsic beauty—divides two small grass plots. In the centre of the first, we observe three circular tangential beds. The outer ones have Yuccas in the centre, the central bed is crowned with a fine specimen of the garden Eucynurus. All three beds were rich in blossom; they were edged with the prolific Longfellow Daisy, while Parrot Tulips and choice mixed Violas were ranged around in concentric rings. Two

dwarf silver Pelargoniums filled in with Fuchsias Mrs. Masters and Rose of Castile, with tuberous and fibrous-rooted Begonias. The central bed has exceptionally fine specimens of Fuchsias, Abutilon Thompsoni, and Artemisia, with a carpet of Massembryanthemum. We were now close to the lake, round whose borders we observed some fine Bamboos, Eulalias, Gunnera, Lombardy Poplars, and Pampas-grass. The little islands are bordered with masses of yellow Iris. A fine cricket-ground occupies the centre of the park, and on its north side is a pleasant terrace mount. The southern slope of the mount is bedecked with Eucynurus, Roses, dwarf Laburnum,

Messrs. F. Watts and F. R. Shepherd have published the results of their experiments upon the Sugar-cane, with a view to ascertain its natural requirements. Summarising, it would appear that, for plant-canes under these conditions potash is the manual constituent having the most marked effect; that nitrogen has a slight, but not very marked, beneficial effect; and that phosphates decrease the yield. The results obtained by the use of phosphates are very different from what was expected, for the soils on which the experiments have been conducted are remarkably deficient in phosphates.

GRENADA.

Zephyranthes tubispatha, Herbert. — During the months of April and May one may notice that the dry unsightly open spaces about the town of St. George are looking quite transformed with the glory of the above-named plant. At the Botanic Garden it covers ground where turf refuses to grow, and is especially useful in hiding the soil along the edge of walks, though it grows, too, among the turf. In this way we plant thickly, and so have at the flowering season a large number of flowers open at the same time. Within the past week (May 3), when in town, I noticed thousands of this *Zephyranthes* in flower, growing evidently where they had been self-sown, and had never received care or attention. The upper portion of the flower is a pure white, the lower part green, and, unlike the Snowdrop, to which it may be likened in its habit of growth, the flower-tube stands nearly erect. In colour the leaves are a shiny green, some 6 to 9 inches long, narrow, and not more than a quarter of an inch wide. The flower stem is about the same length.

CROCFPIA PALMATA, W.

The leaves of this tree are remarkable not only for their large size, but also for the way in which they roll up into a sort of ball after falling from the tree, and are at this stage blown about by the wind. In a hilly and mountainous country, like Grenada, where everybody must ride on horseback to get about the colony, it not unfrequently happens that horses are startled by the rustling of these dried leaves as they lie on the ground, or when running along in front of the wind.

Locally, the tree is known as the Bois Canot. From its long hollow leaf stalks boys manipulate bird cages. These leaf stalks are 30 inches in length, and their blade or leafy portion about the same number of inches across, measured either way. This refers to young plants such as would be of use among stove collections of ornamental foliage plants. The leaves are alternate, ten to twelve-lobed, and the stem from where they grow has a ring plainly visible out-side, which indicates where the partitions of the stem are. In colour they are a dark green above, and nearly white below, with the ribs of the lobes prominent underneath, each graduating to a common centre, where they unite with the top of the leaf-stalk. The whole plant is clothed with small and rather stiffly pointed hairs. The stem is hollow, and jointed like a Bamboo, and the interior lined with a white mealy substance. In the older growth the wood becomes partly solid, but in the young soft stems there is little other than large hollow spaces. The tree is common in the island. When it grows into tree-like dimensions, its habit is to throw out roots which hold the trunk several feet above the ground. In windy weather, when the leaves are wafted to and fro by the wind, and before they drop, their appearance is very effective, due to the silvery colour of the under side brought to view. The leaves, after they have fallen, leave behind a large scar upon the trunk. Ants sometimes make a home of the hollow stems. *W. E. Broadway, Grenada.*

VEGETABLES.

LATE BROCCOLI.

REFERRING again to this subject, and the time of sowing, there is no doubt that seeds are often sown much too early for obtaining the best results so far

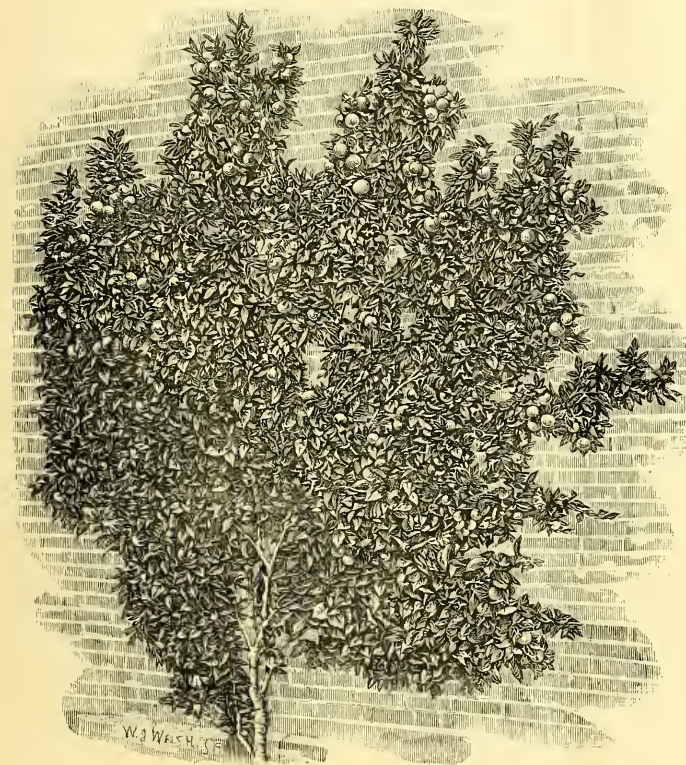


FIG. 158.—ORANGE TREE IN FRUIT, GROWING AGAINST A WALL IN THE KITCHEN GARDEN AT OSBORNE. (SEE P. 398.)

circular beds beyond the shelter contained English Irises, Pæonies, Golden Viola, White Viola "Countess of Hopetoun," Spanish Iris, and other choice plants. The border between these lawns and the south wall is rich in herbaceous plants, including Genista, Cupressus, Yews, Box, Arbutus, Sweet Briar, Viburnum Tinus, Broom, Spiræa, Holm Oak, white and purple-flowering Currants, Laburnum, Sea Buckhorn, Sunsch, Berberis Darwini, B. dulcis, Kalmia, Weigela, and very fine specimens of Escallonia macrantha.

Crossing a very charming lawn, and taking the path beside the drinking fountain, we come to a smaller lawn, with a fine bed of herbaceous plants on the east side. In the middle of this lawn we noticed a very attractive bed, consisting of eight outer divisions surrounding an oval centre. The outer edging is of Viola Bullion, the second rows consisting of

Osmannthus, Prunus Pissardi, and yellow and white Broom. The beds around the tennis-court were conspicuous for their wealth of foliage and blossom.

COLONIAL NOTES.

TRINIDAD.

We have recently received the *Bulletin of Miscellaneous Information* from the Royal Botanic Gardens, Trinidad, and note among its contents, papers on selection of seedling Sugar-canes, *Grevillea robusta*, *Isotoma longiflora*, Utilization of the Bamboo, *Cinnamomum camphora*, shade trees, and the Bergamot Orange; as well as shorter notes upon subjects of interest.

as a late supply is concerned. From the second week in May to the first week in June will be found quite early enough in the south and home counties for sowing the late varieties. My plan is to transplant direct from the seed-bed to the quarter to be devoted to Broccoli; and if sown early, plants are also drawn up spindly before ground can be spared for the crop. Early planting is not desirable, and although often advised, I always avoid plating on rich ground, medium-sized sturdy plants being always better able to pass through a severe winter. A plot that has been cleared of Strawberries or Peas is often used, the ground not being dug over, but simply hoed and cleaned, drills being drawn with the hoe, or chopped out with a spade if extra firm, and the plants inserted with a strong dibber or a crowbar, and well watered in. At the present date (June 12) we still have some heads of Broccoli usable, while the autumn-sown quarter of Erfurt Cauliflowers is also furnishing beautiful white heads, and have been ready several days. H.

SOCIETIES.

ROYAL HORTICULTURAL.

JUNE 15.—A meeting of the committees was held in the Drill Hall, James Street, Westminster, on Tuesday last, being the first ordinary meeting after the Temple Show. An extensive exhibition could hardly have been expected therefore, but the hall nevertheless was well filled, and exhibits of one sort or another were numerous, and some of them good. The two weakest features were Orchids and fruits; there were few exhibits of the former, and of the latter there is expected to be so unusual a request next week in connection with the Queen's Commemoration, that it was not surprising it was not present in large quantity. Feronias, Fyotrums, Irises, and other summer flowers from out-of-countries accounted for the greater part of the space, and the rest was of the usual miscellaneous character.

Floral Committee.

President: W. Marshall, Esq., in the Chair; and Messrs. Joo, Fraser, B. Dean, James Hudson, G. Nicholson, G. Gordon, John Jennings, C. J. Salter, C. Jeffries, J. D. Pawle, Chas. K. Pearson, Chas. E. Shea, H. J. Jones, Jas. Walker, Ed. Beckett, H. J. Cutshaw, Chas. Bick, H. Turner, Geo. Paul, R. M. Hogg, and Ed. Mawley.

Mr. THOS. S. WARE, Hale Farm Nurseries, Tottenham, showed a collection of hardy ferns, conspicuous amongst which were many fine Irises. An Award of Merit was recommended to a variety of *L. germanica* named *maxima*, a handsome, large flower. Several spathes of the purple-flowering *Arum* *Dracunculoides* were noticed. The remainder of the flowers represented a variety of species of useful hardy flowering plants (Silver Banksian Medal).

A group of Carnations in flower from Messrs. J. FRED & SONS, Boupell Park Nurseries, London, S.E., contained several good perpetual-flowering varieties, Mr. F. H. MESSURES, Oak's Improved Perpetual Cheer, and Miss MEASURES, all searlet-crimson shades of some merit. A few pink-coloured *Souvenir de la Malmaison* were included also (Silver Flora Medal).

Messrs. W. PAUL & SON, Waltham Cross Nurseries, Herts, had a group of plants in flower of their new enemy-white-flowering Tea Rose *Madame de France*.

A group of Cannas from Messrs. H. CANNELL & SONS, Swanley, Kent, made a gorgeous display, the colours being exceedingly bright and rich. It was one of the best exhibits of Cannas we have seen, and the group included a great number of the best new kinds, including *Hilli* and *Austria* (Silver Flora Medal).

Messrs. FRANK COXT & CO., Braiswick Nursery, Colchester, made a lovely display of garden Roses, shown in good-sized bunches. The variety of flower and foliage was considerable, some with flowers from 4 to 5 inches across, others as small as a sixpence. A few of the more prominent were *Paul's Carmine Pillar*, *Brenda*, *Austrian Copier*, and *Austrian Yellow*, *Grandiflora*, and a few of the fine hybrid Sweet Briars (Silver Banksian Medal).

Messrs. KELWAY & SON, Langport, Somerset, made a very gay exhibit of Peony flowers in great variety, and some of their excellent *Dolphins*, two of which were recommended an Award of Merit. The variety *Sir John Forrest*, a dark purple-blue flower, with creamy-white centre, and *Clara Stubbs*, decidedly blue, Beckett's blue almost, with a white centre; the flowers in each case were large and good (Silver Flora Medal).

Messrs. R. WALLACE & CO., Colchester, had a beautiful and extensive exhibit of Lilies, Irises, and Galochorts. An Award of Merit was recommended to *Calochortis Gunnisoni*, a moderately large, rather spreading flower, of white or cream colour, the yellow stamens being produced from a green ground. Varieties of *C. venustus* and other species were very fine. *Irish Xiphium* was represented by a large

number of varieties of many shades of colour, and exceedingly pretty. *Lilium Humboldtianum* x, and *L. umbellatum* were each displayed in some variety. The collection of Brodiaeas included fine umbels of the blue-flowered *B. laxa*, also *B. congesta*, and the singular-looking *B. coccinea* (Silver Flora Medal).

Messrs. DONNE & CO., Robesay, N.B., and Orpington, Kent, had a large exhibit of flowers of decorative varieties of Polyanthuses, double-flowered Dahlias, and their single-flowered Cactus varieties; but their best display was one of *Erythrum roseum* flowers in sprays. These were very fine, and included flowers of many shades, from *Gloire d'Italie*, deep rose-red, to *Aphrodite*, white (Silver Banksian Medal).

Messrs. O. COLLINS & SONS, Bath, exhibited flowers of garden Roses in their well-known style and arrangement, among them we noticed sprays of Colling's single *Crimson Bolder*. It has large single flowers of effective colour, and is apparently unusually free. The Sweet Briars and Austrian Briars were well represented, and a few blooms were shown of a white-flowering hybrid Tea Rose named *Purity* (Silver Banksian Medal).

Messrs. G. PAUL & SONS, Chesham, made a good display of garden Roses, and also of Peony flowers and alpine plants. An Award of Merit was recommended to *Rose macrophylla*, a pretty single rose-coloured flower, with smooth deep green leaves. A very fine variety of Peony named *Whitey*, also from Messrs. PAUL & SONS, was recommended an Award of Merit.

From H. J. ELWES, Esq., Colshoume Park, Andoversford, came a large flower of a species of *Arum*, probably a variety *A. Dracunculoides*.

Mr. F. W. MOORE, of the Oldswinney Botanic Gardens, sent several interesting flowers, including *Abutilon vitifolium* album, a variety with white flat flowers, something like *A. Asenone*, double-flowering *Anemone King of the Seraiets*, *Hemianthus Catherinae*, and a spray of the yellow-flowered *Fremontia californica*.

Messrs. JAS. VERRILL & SONS, Royal Exotic Nursery, Chelsea, showed a group of plants which included *Olearia stracheyana* and *O. Gunnii*, *Abies*, a slender-growing dwarf plant with pale red flowers; also *Raphiophloe japonica*, several Oaks, including *Quercus emetica* and the golden-leaved *Q. pedunculata Concordia*, *Capparis macrocarpa lutea* (a very ornamental variety), *Hydrangea quercifolia*, *Veronica prostrata*, *Tenorium fruticosum*, and *Viburnum Martianum* and *V. mendum*. *Abies*, a slender-growing shrub of several varieties of *Nymphæa Martiana*, *N. Laydekeri*, and *N. odorata*.

Messrs. VERRILL & SONS also made a grand display with *Teony* blooms in variety, and their excellent strain of *Aquilegia* was shown (Silver Flora Medal).

They were awarded a Certificate for a fine golden-coloured *Colours Atlantica*, C. A. aurea. They also showed a few fine Foxgloves, representing their spotted varieties of *Digitalis purpurea*, and a hybrid strain obtained from *erasing D. ambigua* with *D. purpurea*. The flowers are light rose-coloured, spotted inside, and the leaves resemble closely those of *D. purpurea*.

An Award of Merit was recommended to a very pretty Fern, *Pteris (Dryopteris) nobilis*, about 5 inches high, of deep olive green; and a First-class Certificate to *Colonia Munroii*, which grows from 1 to 2 feet high, produces a fairly large single flower, with white ray florets and yellow centre. *Colonia Munroii* is said to be a hybrid from *E. macrantha* and *E. Philippina*. The foliage and flowers are considerably smaller than those of *E. macrantha*, and the flowers are pale rose in colour (Award of Merit), all of which came from the Veitchian establishment.

Some splendid flowers of *Irises* *Gatesii* were sent by C. G. VAN TRENKENS, Havlem, Holland. As mentioned in other pages last week, this *Irish* (figured in the *Gardeners' Chronicle*, vol. viii, 1896 p. 17), is an exceptionally desirable variety.

An Award of Merit was recommended to a pure white-flowering Pink named *Albino*, shown by Mr. T. GIFFORD, Tottenham, and by Mr. LAYTON, though the flowers from the first-named exhibitor were very much the better. It is a fragrant flower, very pure, and the petals smooth—altogether, a variety of some merit. Mr. Gifford also exhibited *Dolphins* and *Potentillas*.

From the Gardens of the Society at Chiswick were exhibited some *Foxgloves* of great form, from seed sown by Messrs. H. BARRON, Andrioux & Co. The terminal flower in each case was empancated; and it appears that this malformation, that we have noticed again and again, has become so fixed that it comes true from seeds.

Mr. C. DYMOTT, Southampton, exhibited a group of plants of a decorative variety of Polyanthus, named *Harry Dymott*. The exhibit from Messrs. B. COLEMAN & SONS, King Street, Messrs. A. W. YOTSON & CO., Stevingage, Herts, were awarded a Bronze Banksian Medal for a group of hardy flowers. A Silver Banksian Medal was awarded to Messrs. J. CHEAL & SONS, Lovfield Nurseries, near Crawley, for an exhibit including a good display of hardy sprays, of such as Irises, *Psychotrias*, and *Violas*, and a few sprays of flowering and ornamental varieties of trees and shrubs.

Mr. B. LADAM, Shirley Nurseries, near Southampton, was awarded a Silver Banksian Medal for a fine exhibit of *Pinks*, including several new varieties, and a few sprays of varieties of *Campulana persicifolia*.

The exhibit from Messrs. B. COLEMAN & SONS, King Street, Covent Garden, included as usual a representation of most of the hardy bulbous plants now in flower. *Irises* particularly were very fine. *I. variegata* in the varieties *Maori*, *alba*, and others, *I. pallida* var. *Albert Victor*, Spanish *Irises* *Thunderbolt* and *Princess Lily*, very pretty yellow.

Paeonies and other flowers were well shown (Silver Flora Medal).

Mr. CHAS. TURNER, Royal Nurseries, Slough, exhibited a group of Carnations composed of most successfully-grown plants, and representing such choice varieties that Awards of Merit were recommended to the four following:—*Water-white*, white or palest shade, very fine; *Helmstam*, also white, but more pure, and of exquisite form; *Farras*, deep rose, very large, and excellent in form; and *Cecilia*, yellow self, nearly 5 inches across, and of shapely form.

A varied and pretty group of hardy herbaceous plants and flowers from Mr. M. PARCHARO, Christchurch, was awarded a Silver Flora Medal.

Orchid Committee.

President: H. J. VEITCH, Esq., in the chair; and Messrs. J. O'BRIEN (Hon. Sec.), De B. Crawshaw, H. Ballantine, F. Sander, H. Williams, W. H. White, E. Hill, J. Gabriel, A. H. Snee, W. H. Young, H. J. Chapman, S. Courtland, J. Douglas, and T. B. LAWRENCE.

Sir T. LAWRENCE, Bart., Barford, Dorset (gr. Mr. W. H. White), staged a small group of specially interesting *Gracilias*, among which the most remarkable was the long-necked hybrid *Vanda* x *Miss Joaquim*, now flowering for the first time in Europe. The plant was obtained from a cross between *V. tereis* and *V. hookeriana* some years ago by Miss Joaquim at Singapore. The specimen shown had attained the height of between 7 and 8 feet, and produced an inflorescence with three fully-expanded flowers and nine buds. In size and in the form of the sepals and petals, and also in its rose-colouring, with orange disc to the lip, the flowers partook much of *V. tereis*, but *V. hookeriana* was well shown in the openly expanded side lobes and broad front-lobe of the lip (First-class Certificate).

Sir T. LAWRENCE also showed the white-flowered *Geodum Augusti* (Botanical Certificate); a charming plant of the cream-white *Cirrhopetalum nutans* with many spikes (Cultural Commendation); *Aeranthus carpoporphum* of the *A. gracilias* class, with greenish-white flowers (Botanical Certificate); *Laelio-Cattleya* x *Entebbe*, *Dendrobium crystallinum*, and a grand inflorescence of *Phalænopsis amabilis* (grandiflora).

Messrs. JAS. VERRILL & SONS, Royal Exotic Nursery, King's Road, Chelsea, had a very fine group, which secured a Silver Flora Medal. In it were *Cypripedium* x *Measures*, *Veitch's* x *Superbians*, *Laelio-Cattleya* x *Veitch's* variety, the reverse cross of the original *C. x Measures*; two pretty and distinct forms of *Laelio-Cattleya* x *Canhamiana*, that named *Langleyensis* being a very fine light variety; the handsome *Epiphrasinis* x *Veitchi*, *Zygo-catax* x *Veitchi*, *Laelio-Cattleya* x *eximia*, *L. C. x Hippolyta*, *Laelio-Novely*, varieties of *L. purpurata*, and *L. tenebrosa* x *Cymbidium*, *eburneo-Lovi*, *Cattleya* x *cahmiana*, C. *Walkeriana*, fine varieties of C. *Mossie*, *Denbromium Phalænopsis*, D. *Bensoni*, *Disax* x *Veitchi*, fine forms of *Cattleya Mendellii*, *Cypripedium* x *Disax*, C. *superbians*, *Bletia venecuda*, &c.

Mr. HUGH LOW & CO., Clapton, showed *Cattleya Mossie* ("In Memoriam Richard Corrow," a magnificent flower of great size and rich and bright colour (Award of Merit); the white C. *Mossie* Wagneri, C. M. *Arnoldiana*, and C. M. *Reinckeana*; C. M. Mr. E. Ashworth, a light form, with slate-coloured marks on the lip; *Laelio-Cattleya* x *Aphrodite*, *Lelia tenebrosa*, *Bulbophyllum chaptoneae*, &c.

Messrs. F. SANDER & CO. exhibited three fine novelties, each of which secured an Award of Merit, viz., *Laelio-Cattleya* x *Empress of India* (*L. purpurata Brysiana* x C. *Downiana*). The sepals and petals were lilac-rose; lip crimped at the margin, dark purple-crimson with yellow centre; *Cattleya Mossie* ("Empress of India," a grand flower, much resembling that shown by Messrs. Low; and *Laelio-Cattleya* x *Our Queen*, of unrecorded parentage. The plant bore very pretty and finely-formed white flowers, with purple front-lobe to the lip, which had an orange throat and broad white margin.

Sir F. WIGAN, Clare Lawn, East Sheen (gr. Mr. W. H. Young), showed *Laelio-Cattleya* x *Orphanum*, a grand flower of the L.-C. x *eximia* class, but with large maroon crimson lip, with orange disc; L.-C. x *Canhamiana* *Iolanthe*, very finely flowered; the distinct *Cattleya Mossie* Mr. Epton Grey; a fine rose-colored form of *Miltosa speciosa*, with darker purplish markings on the lip; *Epidermium Meatus*, with eight flowers; *Cymbidium tigrinum*, *Miltosa vexillaria* *caudata*, varieties of *Cattleya Mendellii*, &c.

De B. CRAWSHAW, Esq., Rosfield, Sevenoaks (gr. Mr. S. Cooke), showed *Odontoglossum crispum* *Crawshawianum*. The flowers, which were scarcely open, were very heavily blotched, and when mature would be a superb form (Award of Merit).

R. L. MEASURES, Esq., Cambridge Lodge, Cambwell (gr. Mr. H. J. Chapman), showed *Laelia purpurata* *Ernesti*, a very pretty variety of the L. p. *Schrodiana* class, with white flowers, slightly tinted with sulphur yellow, the disc of the lip being soft light rose; the base yellow, with narrow purple lines. Mr. Measures also showed *Lelia tenebrosa* *superba*, a dark variety, in which the reddish maroon markings in the centre of the lip contrasted with its light lilac-rose front; and the singular *Miltosa vexillaria*, *Cambridge Lodge* variety, in which the petals are usually broad, and each segment bears red lines like those on the lip.

H. T. PITT, Esq., Rosslyn, Stamford Hill (gr. Mr. Aldous), showed two flowers of *Angula Pittiana*, with bluish-white flowers. The column and lip appeared distinct from those

organs in A. virginalis, which in many respects it resembled. H. DROEGE, Esq., The Beches, Circus Road, St. John's Wood (gr., Mr. Geo. Walker), showed Cypripedium x Mrs. Herbert Bruce (atream x bellatulum), the flower resembling C. G. J. ELWES, Esq., Coleborne Park, Andoversford (gr., Mr. Lane), showed Disa x Kewensis (Veitchi x tripetaloides), Coleborne variety, which differed from the original in its lighter colored flowers and staminal tube.

FARNHAM RAILL, Esq., Alderhook, Cranleigh (gr., Mr. Barke), sent Miracellium Gemma. P. R. TEWS, Esq., Aunandale, Woodside Park, North Finchley, showed a pretty Odontoglossum crispum and Cattleya labiata Warneri with abundant flowers; and Frau Ida BRÄUER, Riesenach, Zurich (gr., Mr. Schleich), sent Zygopetalum (Pascatoris) corinum, Odontoglossum maculatum, and other species.

Fruit and Vegetable Committee.

Present: T. Francis Rivers, Esq., in the Chair; and Messrs. Jos. Cheal, A. F. Barron, J. H. Veitch, G. W. Cummins, P. C. M. Veitch, J. Wright, Alex. Deau, G. T. Miles, G. H. Sigo, G. Wythes, H. Balderson, J. Smith, Robt. Fife, and F. Q. Lane.

But few exhibits were shown in competition for flavour in Apples, and, of course, no Pears were in evidence. The best Apple was that of Mrs. C. HEASIN, Drumore Gardens, Maidenhead; and Sturmer Pippin was 2nd from Mr. J. C. TALLACK, Bury St. Edmunds.

Seedling Melons were exhibited in several instances. Thanks Bank, from Mr. WYTHES, 57, York House Gardens, Sixtieth Regt., from J. S. WATTS, Esq., Clarence House, East Cowes, Isle of Wight (gr., Mr. E. Martin); and one from Mr. C. HEASIN, from a cross between Hero of Lockinge and L'Favourite.

A collection of fifteen fruits represented several seedlings from Mr. A. BENTON, Westley Hill, Bury St. Edmunds, some of them of very novel appearance. No awards were, however, made to Melons in this occasion.

A Bronze Knightian Medal was recommended to Lord FOLEY, Ruxley Lodge, Claygate (gr., Mr. Miller), for a collection of fruits comprising three bunches of Black Hamburg Grape, eight Melon fruits, a dish each of Early Green Mignonette Peach and Hiberno Nectarine, May Duke and Higgaree Cherries; and a dish of excellent Royal Dukes Strawberries, from an east border, planted under somewhat special conditions in January last.

From the Society's gardens at Chiswick were shown several varieties of Cabbages, and several of them were recommended to the two following, principally on account of their earliness:—Veitch's Earliest of All (R. VEITCH & SONS), seed sown on August 7, 1896, and 61 for use May 15, 1897; and Sutton's Earliest (SUTTON & SONS), also sown on August 7, 1896, and 61 for use on May 15.

The Lecture.

The announcement of the subject of this address was comprehensive to a degree, and excited some curiosity as to its treatment. Those who have had to teach vegetable physiology one year have found that next year they have had a good deal to unteach;—but it may be permitted to use the words, "The pronouncements of Professor Vines as the author of the best English text-book on the subject, were therefore awaited with some interest. As it turned out, the Professor had nothing to unteach; but on the contrary, to confirm what he had previously taught. In fact, vegetable physiology on this occasion was represented by a very lucid account of Fitcher-plants and their work. Eschewing the morphological part of the subject, Professor Vines confined himself to the physiological aspect, and showed that Nepenthes was the only Fitcher-plant certainly known to have digestive properties, i.e., to secrete a gastric juice in the form of a ferment, all the others so far as at present known, are mere insect-traps, catching insects and absorbing the products of their decomposition just as saprophytic fungi feed on decaying animal and vegetable matter.

Duchastre and some other botanists of late years have questioned Professor Vines' account of the digestive properties of Nepenthes, and their observations had induced the Professor to repeat his former experiments, with the result of confirming his original researches, as indeed might have been anticipated from the peculiar glandular structure of Nepenthes, which is wanting in any other pitcher-bearing genera, as also in the pitcher, occasionally formed on the leaves of Cabbages and Lettuces.

Professor VINES suggested that "pitchers" originated as means for economising the available water, that they caught insects as well as water, and that subsequently the plants have adapted themselves to benefit from these also.

Obituary.

ROBERT DOUGLAS.—This pioneer nurseryman died suddenly at his home, Waukegan, Illinois, on Tuesday, June 1, aged eighty-four years.

Mr. Douglas has been aptly named the "father of forest-planting in America." He was born at Gateshead, England, on April 20, 1813, and went to the United States in 1836, taking up his residence permanently at Waukegan in June, 1841. He was the first to raise evergreens from seed in the open air in that country. Up to that time, all of the foreign

evergreens were imported from Europe at two or three years old.

Mr. Douglas had seen the seedlings growing in the north of England without shade, and at the close of the war he bought seeds in quantity, and sowed them by the acre. They came up as freely as any that he had ever raised, but he did not raise a plant, as they all damped-off, or were scorched-off before the autumn. The next year he used frames covered with coffee-sacks, and the seedlings did well, and were no great trouble, as the rain went through so that they did not need watering; but the coffee-sacks soon rotted. After that he made lath-frames, such as are now in common use. But for the past twenty years he had grown them under lath arbours. Mr. Douglas was the first to plant and care for artificial forests in the States, and on the largest scale that any have been imported.

After the Catalpa speciosa became noted, he grew this tree by the million, and many western States now have forests of this and other trees, which were all raised or planted by this enterprising man. Another of his noted introductions to cultivation is the blue Spruce, some magnificent specimens of which may still be seen on his grounds in Waukegan.

Robert Douglas's name is associated with all the early efforts of founding horticultural societies in America, including the American Association of Nurserymen. He was a genial, modest, unselfish, and liberal-minded man, honourable and upright in all his business dealings. He had rendered grand and noble service to the cause of horticulture during the past half century. American Correspondent.

MR. JOHN MONRO.—Many of our older readers will regret to hear of the death (after a severe illness of about five months) of John Monro, on Sunday morning, at Barnet, where he had lived for many years.

He was born in 1819 at Duns Castle, where his father was gardener. When about twenty-three years of age, John Monro came to London, and was for a time at the Exotic Nursery, Chelsea, then in the hands of Knight and Perry. From there he went to the Grove, Watford, and subsequently to Colney House, where he was first head-gardener, and afterwards had charge of the whole estate. Having, about 1855, started the market-place at Rabley, and finding that to do any good he must devote his whole time to that, he resigned his position at Colney House in 1855, afterwards establishing two places at Potters Bar, Osborne Park Gardens and Holly Bank. In his prime he was intimately connected with the leading spirits in the horticultural world, many of whom have preceded him, namely, Dr. Hogg, W. Thomson, W. Thrower, and many others.

He raised several new sorts of Cucumbers and Melons, and was the inventor of the cannon-boiler.

MARKETS.

COVENT GARDEN, JUNE 17.

[We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Thursday, by the kindness of several of the principal salesmen, who revise the list, and who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general averages for the week preceding the date of our report. The prices depend upon the quality of the samples, the supply in the market, and the demand; and they may fluctuate, not only from day to day, but often several times in one day. E. J.]

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

Table with 2 columns: s. d. s. d. and descriptions of plants like Adiantum, Aspidistra, Calceolarias, etc.

BEDDING PLANTS AND ROOTS FOR THE GARDEN IN VARIOUS coming very good.

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

Table with 2 columns: s. d. s. d. and descriptions of flowers like Anemones, Arums, Bouvardias, etc.

FRUIT.—AVERAGE WHOLESALE PRICES.

Table with 2 columns: s. d. s. d. and descriptions of fruits like Apples, Walnuts, Nectarines, etc.

VEGETABLES.—AVERAGE WHOLESALE PRICES.

Table with 2 columns: s. d. s. d. and descriptions of vegetables like Artichokes, Asparagus, Beans, etc.

POTATOES.

Trade has been firmer for new Potatoes the last day or so.—Jersey Flukes and Kidneys, £9 to £10; St. Malo and Cherbou, £7 10s. to £8 10s. Old: Dunbar Maincreps, 90s. to 100s.; others, 20s. to 60s. John Bath, Wellington Street, Covent Garden.

THE WEATHER.

[The term "accumulated temperature" indicates the aggregate amount, as well as the duration, of degree of temperature above or below 42° Fahr. for the period named; and this combined result is expressed in Day-degrees—a "Day-degree" signifying 1° continued for twenty-four hours, or any other number of degrees for an inversely proportional number of hours.]

Table with columns: TEMPERATURE, ACCUMULATED, RAINFALL, BRIGHT SUN, and various weather data for June 1897.

Table with columns: Day-deg., Day-deg., Day-deg., Day-deg., 10ths, and Ins. for weather data.

The districts indicated by number in the first column are the following:—0, Scotland; N. Principal Wheat-producing Districts—1, Scotland, E.; 2, England, N.E.; 3, England, E.; 4, Midland Counties; 5, England, including London; 6, Principal Grazing, etc. Districts—6, Scotland, W.; 7, England, N.W.; 8, England, S.W.; 9, Ireland, N.; 10, Ireland, S.; *Channel Islands.

THE PAST WEEK.

The following summary record of the weather throughout the British Islands for the week ending June 12, is furnished from the Meteorological Office:—

The weather during this period varied greatly, but became fine and bright generally towards the end of the week. Rain of frequent occurrence over England and Ireland during the earlier half of the week, and over Scotland during the latter. Thunderstorms occurred from time to time in different parts of the kingdom, that experienced in London on Sunday being accompanied by extremely heavy rain in some of the southern and south-eastwards suburbs.

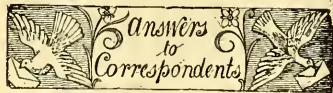
The temperature varied greatly, but was, on the whole, above the mean, although it showed a deficit over Scotland, and just equalled the normal in 'England, N.W.,' 'England, N.E.,' and 'England, E.' The highest of the maxima were registered in the 14th, when they ranged from 83° in the 'Midland Counties,' and from between 80° and 82° in the other English districts, to 75° in 'Ireland, S.,' and 72° in 'Scotland, W.' On the 5th and 9th, the maxima had been very low, being less than 50° at some stations, and below 50° in most parts of Great Britain. The lowest of the minima, which were recorded, as a rule, during the middle of the week, ranged from 31° in 'Scotland, E.' (at Nairn), and 35° in 'Scotland, N.,' to 45° in 'Ireland, N.,' and 49° in 'Ireland, S.' and the 'Channel Islands.'

The rainfall was considerably more than the mean in many districts, but was less than the normal in 'Scotland, N. and W.,' 'England, N.E.,' and the 'Channel Islands.' The falls recorded over the southern parts of England on the 8th ranged between 0.60 inch and 1.10 inches.

The bright sunshine exceeded the mean in the 'Channel Islands,' but was deficient else here—especially over Ireland and 'Scotland, W.' The percentage of the possible duration ranged from 59 in the 'Channel Islands,' and from 43 in 'England, S.W.,' to 19 in 'Scotland, W.,' 11 in 'Ireland, S.,' and only 7 in 'Ireland, N.'

IMPROVEMENTS ON THE ISLAND OF SCALPAY.

Sir DONALD CURRIE, ever since he became proprietor of this beautiful island, has been laying out very large sums of money in making it a comfortable residential Highland resort. On the north, south, and west shores of the island, Sir DONALD has laid out several plantations, which will ultimately add much to the beauty and shelter of its lovely shores. These plantations have just been completed. Nearly 1,500,000 trees have been planted in them; chiefly Scotch Fir, Larch, Spruce, and Birch, with a considerable variety of finer kinds. The whole work has been successfully carried out by Messrs. HOWDEN & Co., nurserymen, of Inverness, although under circumstances which were often very adverse, owing to stormy weather and the scarcity of labour. With characteristic energy, Sir DONALD has pushed on work of all sorts, and even now Scalpay is one of the most complete establishments in the Highlands of Scotland. Old Scalpay House is entirely obliterated, and a new mansion has taken its place; new gardens have been added; new roads have been made, and others are in progress; and new farm offices are completed. A pier has been planned, and extensive water arrangements have also been carried out.



CARNATIONS: *G. D.* Your plants are affected with eel-worms in the leaves, often figured and described in these columns. Burn your plants, turn out the old soil, and get fresh.

CRICKETS IN CUCUMBER-PITS: *E. J. Sargeant & Co.* We take these means of destroying crickets from a book of garden recipes. "Mix roasted Apple with a little white arsenic powdered; divide the Apple so prepared into small pieces, and place it in saucers in the pits at night. Take one pint of oatmeal and two ounces of arsenic, together with a little ground aniseed and caraway-seed. This should be laid on pieces of paper in convenient places. Arsenic and honey may be mixed together and laid about for them. Lay it in bits on pieces of glass on the inside of oyster-shells; it is necessary to use something that has a hard surface that will not absorb moisture from it, or it will be so dry after the first night as to render it useless. Rhubarb leaves are said to be a cure for crickets." Perhaps the cure for ants which we advised you to

try may be effective against crickets. Do not forget that arsenic is a most powerful poison. Use it with every possible precaution.

BULBS: *M. B.* Your bulbs are attacked by the bulb-mite. As the creatures are inside the scales, no application is likely to be of much use. Grow them on as well as you can, in the hope that by increased strength the plants may resist the attack—or better, burn them.

GLOXINIAS: *G. H. H.* These hose-in-hose flowers, the result of a too nourishing diet, are not uncommon, but they are rarely inherited by the plants raised from them by seeds or leaf cuttings. We, however, see the abnormality perpetuated with fair constancy in the double varieties of Canterbury Bells.

MILDEW ON ROSES: *J. O. B.* Some good cultivators prefer to rely upon soft-soap dissolved in cold water alone; Mr. Maycock being one who does so. Others like to employ flowers-of-sulphur as well. The following is a good recipe:—Soft-soap, 1 lb., boiled in 4 quarts of rain-water for ten minutes; then add 1 wineglassful of petroleum, and 2 of sulphur on removing the sauceman from the fire. Decant into a stone jar, and cork tightly. It will make from 18 to 20 gallons when diluted fit for use.

NAMES OF PLANTS: *Correspondents not answered in this issue are requested to be so good as to consult the following number.*—*A. J. Cork.* 1, *Heuchera sanguinea*; 2, *Cercis siliquastrum*, Judas-tree; 3, *Conoclinium lanthimum*.—*W. T.* *Carex paludosa*.—*C. L. W.* 1, *Euphorbia Lathyris* (Caper Spurge); 2, *Ajuga reptans* (Bugle).—*J. E.* *Phyllis peruviana* (the Cape Gooseberry).—*A. G. W.* *Orthogalum nutans*, or *O. pyrenaicum*; we cannot tell which from the specimen sent.—*E. T. W.* The one with the purple lip and light-yellow spots on each side is *Cattleya Warscewiczii*, commonly known in gardens as *C. gigas*. The other is *Cattleya labiata* Gaskelliana.—*M. C.* *Rothsay*. 1, *Livendula dentata*; 2, *Libonia floribunda*. The others are *Selaginella Willdenovi* of gardens, and *Cestrum fasciculatum* (*Habrothamnus fasciculatus*, *Bot. Mag.*, 4189).—*G. E.* *Schrebursia*. The flower is not that of *Dendrobium fimbriatum oculatum*, but of *D. moschatum*.—*J. C.* *Fifeshire*. 1, specimen insufficient; 2, *Tecoma australis*; 3, *Oxalis Ortogisii*; 4, *Acer polytrichum*; 5, *Pellonia Davisiana*; 6, *Pellonia pulchra*.—*P.* *Clematis Lady Bovill*. If the climbers are drawn back from the walls and fastened to stakes, and as many of the stems as possible preserved, they could be fastened in their places again after the painting was done, and they would probably not feel the change much.—*G. Francis.* *Dendrobium moschatum capreum* (*Orchid Album*, plate 165).—*E. M.* Send some blooms to a Rose nurseryman; we cannot name them with certainty.

NECTARINES: *H. H.* The trees from which the leaves sent were taken are evidently suffering from bad management. We would advise that the trees be lifted in the early autumn, getting out the whole of the roots with as little injury to them as is possible, wrapping them in wet litter until new stations can be prepared. With the idea of getting them into a fruitful condition the branches have been very severely pruned, a mistaken practice once commonly followed. Doubtless the gumming will cease in the course of the next growing season. The border consisting of very stiff soil, it may be advisable in making the border anew to wheel out nest of it, replacing it with fresh turfy-loam, liue-rubbish, and charred garden-refuse, putting these materials together in a compact manner after mixing them, and making the border 6 inches higher than before to allow for sinking. The trees may then be planted with their roots from 6 inches to 4 inches from the surface, covering these with loam which has been stacked for one year, sifted potting-bench-refuse, and a small quantity of spent hot-bed manure or leaf-mould, into which they will soon push. Whilst filling in this mixture about the root, copious waterings with a large rose can be afforded, which will compact it about the roots better than can be done in any other manner. Afford the entire border a thorough watering, and supply a slight mulch of litter. If the lifting be done when the leaves remain on the trees, it will be advisable to retain them in a fresh condition for a month or longer by ventilating the house moderately, and syringing the trees late in the afternoon, not however closing the house at night. When the leaves assume the tints of decay, give

ample ventilation, and keep the trees cool at top but not dry at the root. During the present summer lay in only such young wood as is likely to be fruitful, and as much of it as may be required to furnish a crop of fruit and no more. This wood, if it be laid-in at 8 to 12 inches apart, should get perfectly ripened.

ORCHIDS: *J. R.* The *Cattleya Mossiae* is not more than a good average variety. The *Laelia tenebrosa* is above the average in size, and the blotch of purple on the base of the lip not more than ordinarily dark, and rich in colour.

PELAGONIKUM: *J. S.* There was no trace of fungous disease, neither has any appeared since, in a plant grown on for experiment. *G. M.*

RHODEDENDRON GRAFTING: *W. C. F.* As the nearly-ripened shoots are the best for grafts, and these are not obtainable before July, the grafting of the plants has to be done at a time of heat and drought, and the operation is not very successful when done out-of-doors. Besides, headed down old plants of *R. ponticum* scarcely offer the best stocks for grafting purposes. When a *Rhodedendron* is grafted, the shoots or stem operated upon should be furnished with, at the least, one pair of healthy leaves just above the point at which it is headed-back, whether self, tongue, or whip grafting be the methods adopted. And the grafted plants are usually kept in a close box or case within a greenhouse—or better, one a little warmer. In the case of the old stools that you wish to graft, if you could cover them with a frame or hand-light that is practically air-tight, success would attend the operation if you grafted by approach or inching, i.e., by sinking pots of the ennobled varieties you wish to place on the stools round about them. Good strong pieces can in this method be affixed to the stocks, which soon make a good crown or bush. The part below the point of union is cut off close to the latter when it is seen that it is no longer required for the support of the graft. Inarching young stocks grown one year in pots is a method commonly adopted by nurserymen. All that has to be done is to sink as many of these round the mother-plant as there are shoots to be inarched. This is done in late summer, and the point of union is clayed or waxed, and mossed over in the usual manner, the plants being sprinkled with water morning and evening, and the old plants not allowed to get stocked in growth for lack of moisture in the soil.

STRAWBERRIES: *J. J. R.* The fruits are well-developed, and have suffered considerably from the ravages of slugs, and from blows caused by hail. There was no appearance of any mildew or other fungus.

TOMATOES: *A. McDonald.* The flowers are imperfectly or not at all fertilised. This may be a constitutional defect of the variety, or brought about by excess of humidity in the air and lack of ventilation.

TOMATOES: *Wm. Dennington.* Try the effect of the Bordeaux Mixture on the plants. It may be employed once in three weeks as a preventive of fungus attacks, and to kill the fungus if it should obtain a footing on them. Before using it over all of the plants in a house, first ascertain in what state of dilution it is safe to use it on the plants. Directions for making the mixture have frequently been given in these pages.

WOODLICE IN THE MUSHROOM-HOUSE: *J. J. Clark* out mouldy hay and anything that affords a harbour for them, and then pour boiling water between the Mushroom-beds and the walls and partitions, and dash it beneath the hot-water pipes, and into all likely hiding-places. Carbolic acid or borax strewn about may render the place untenable for the insects. The water cure must be followed up for a fortnight or longer. Roofing-slates laid on the floor about a quarter of an inch above it make capital traps for woodlice.

COMMUNICATIONS RECEIVED.—*M. D.*—*G. Blades & Co.*—*G. W.*—*J. R.*—*A. D.*—*A. H. K.*—*P. A.*—*P. A.*—*C. B.*—*L. L. W.*—*Verdon*—*W. B.*—*Shelley*—*Blanca*—*M. W. P.*—*A. M. H.*—*Malmberg*, Stockholm.—*H. W.*—*D. R. W.*—*A. M.*—*W. P.*—*Dilworth*—*A. E.*—*C. T.*—*Turner*—*J. H.*—*H. B.*—*Davis*—*J. H.*—*A. P.*—*W. W.*—*R. I. H.*—*C. P.*—*L. H.*—*H. H.*—*R. H.*—*R. W. W.*—*W. H.*—*Shelley*—*J. A.*—*J. D.*—*W. E. B.*—*H. Northampton*—*J. Ross*, Florence.

SEEDINGS PROCURED, &c. RECEIVED WITH THANKS.—*Sir C. S.*—*H. W.*—*Royal Oxford Horticultural Show.*—*Croydon Horticultural Show.*—*F. Moore.*



THE

Gardeners' Chronicle.

SATURDAY, JUNE 26, 1897.

CLAREMONT.

TO alight at a station bearing the name of Claygate, to tramp along a mile or so of dusty road, passing through a scattered hamlet, scarcely seeing a fellow-traveller on the way, unless it be the ubiquitous cyclist, makes one feel that one really is in the country. Nevertheless, it is but a matter of a dozen miles from the centre of London, and between it and that centre there are such places as Wimbledon and Surbiton, suburbs with the population of good-sized provincial towns.

The transition between London and its suburbs is mostly gradual, from one form of unloveliness to another; but here, after passing Surbiton, we swerve suddenly on our course, and looking down upon Messrs. Barr's mosaic nursery as we pass, find ourselves almost immediately in the country. In places, masses of glowing Broom and Gorse tell us we are on light soil, a sandy loam used for brick-making, and thrown up into low undulations and tree-topped hills. It is the middle of May, the trees are bedecked with new foliage, but there are traces of the recent occurrence of sharp frost. Eleven degrees, we were told, had been recorded a night or two before our visit (on May 14); at any rate, here and there young Ash-shoots were reduced to friable tinder, Lime-shoots were browned, and Beech twigs hung limp, as if parboiled, their nascent energy thus quickly brought to a standstill. In the gardens, the presumably delicate exotics had suffered less than the natives, partly, no doubt from the greater amount of protection to be had. But we are anticipating. We have not reached the garden yet. Passing through the entrance-lodge, we walk knee-deep in Buttercups and rich grass, noting farm-buildings and an obelisk on the left, and seeing before us a low hill crowned with a fine group of Scotch Pines, with little or no trace of gardens, pleasure-grounds, or mansion. A quaint brick-gateway in an old wall at length reveals itself. We lift the latch, and are at once in an old-world garden, encased by high brick walls, perforated by innumerable nail-holes, wherein generations of gardeners have affixed the shoots of Pears and Plums, and which remain as monuments of past labour, even as wires and cordons now attest the work and skill of the present. In passing, Mr. Burrell tells us that in some cases the Pears are better on the Pear-stock than on the Quince, which exerts too restrictive an influence, so that the growth is stunted. Probably this applies to certain varieties only. At the base of some

of the walls are herbaceous borders, and a long row of Polyanthus and Primroses of good strains.

The walls, erected by Sir John Vanbrugh, date from 1704, the year that Gibraltar was captured. They serve to portion off three or four separate enclosures, some are clothed with fruit-trees, others are draped with the festoons of the Wistaria, or radiant with the pink flowers of the Judas tree. *Spiræa prunifolia*, the double form, swaths a pilaster with a sheet of white blossom. The white variety of *Pyrus japonica* covers another stretch of wall with its porcelain-white flowers. Gloire de Dijon Roses are blooming freely, and clusters of the yellow Banksian Roses form a marked contrast to what we had seen not half an hour since, when we were gathering dead leaves of Ash, Lime, and Beech. Potato-tops inside the walls were nevertheless blackened, but Peas seemed uninjured. Raspberries and Gooseberries are grown on trellises, Mr. Burrell getting a profusion of excellent fruit from his Gooseberry-trellises. Hereabouts is an old high-roofed half-span greenhouse, in two compartments, tenanted with Azaleas, Calceolarias, white Arums, and miscellaneous plants of that character. Some gardeners would complain that the plants must be too far from the glass. They do not appear to suffer in any way here—indeed, it is rare to see plants so clean and healthy in old structures like these.

The frame-ground contains the usual houses and pits for the supply of a large establishment, but it was the trees that formed the special object of our visit, and there are, indeed, some noteworthy ones. The king of them is one that stands near the gardener's house, *Pterocarya caucasica*, a near ally of the Walnut, with long pendent racemes of three-winged nuts (see fig. 47, in *Gardeners' Chronicle*, Sept. 29, 1894).

The young leaves had suffered from the recent frost just as Walnut-trees are apt to do, but the injury will soon be repaired. This tree has a short bole, with a girth of some 13 feet at 3 feet from the ground, whilst the circuit of the branches is about 100 yards. The leaves were only partially expanded, so that we did not see the tree to perfection. Near his majesty, as we may call him, is a good specimen of *Laurus Sassafras*, that one does not often see, a symmetrical *Wellingtonia* of good size, and a *Maidenhair-tree* (*Ginkgo biloba*) with a flush of yellowish-green, always interesting, but now more than ever so since the recent discovery by some Japanese botanists of peculiarities which link it on really, and not merely apparently, to Ferns and Cycads. Not far off is a good specimen of *Taxodium distichum*, not so fine as at Sion, but still remarkable for growing so freely on a dry soil. It has not as yet thrown up any of the peculiar knobs from the root which characterise the growth of this tree. The head is constituted of nearly horizontally-spreading branches breaking up into a spray of fine ascending branchlets, forming a marked contrast to the scanty, loosely-dispersed, fat, beaded branches of its neighbour, *Gymnocladus canadensis*, one of the latest of trees to expand its foliage, and with its buds still closed on this May 14.

Another "hole in the wall" gives access to a paddock, traversing which the mansion is soon reached. It is a decidedly imposing square building, of classic architecture, erected by Brown for Lord Clive, placed on rising ground, and looking over hill and dale.

And here we may pause for a moment to recall the tenants this house has had, including the Earl of Clare, from whom the place derives its

name; the Duke of Newcastle, in whose times the grounds were improved by Kent; Sir John Vanbrugh; Clive, one of the founders of India; the Princess Charlotte, daughter of George IV., who occupied so large a share in the affections of the people; and her husband, King Leopold of Belgium, who offered it as a refuge in 1848 to King Louis Philippe in his exile. Ultimately it became, and still remains, the property of Her Majesty, who has assigned it for the present use of H.R.H. the Duchess of Albany, the widow of the clerly Prince Leopold.

The Duke and Duchess of Kent, after their marriage at Kew Palace, on July 11, 1818, went, we are told, to Claremont; and the Queen herself shortly after her marriage, retired to Claremont to escape London. The happiest days of the Queen's childhood, indeed, she tells us herself, were spent at Claremont. "The time spent there," she adds, "was always a very happy one, the Queen and the Prince being able to take charming walks in the pretty grounds and neighbourhood." From 1840 to 1848, with the exception of 1840, it was the practice of the Queen to pass her birthday, May 24, in quiet retirement; and no wonder, for the charm, variety, and reposeful beauty of the pleasure-grounds are seductive to no small extent.

It is impossible to convey more than a general impression of woods and glades, dells and swelling undulations, and clear, glassy pools—a good specimen of English park scenery, in fact. Unfortunately, the rabbits have rather more than their share of the amenities, as they are shocking landscape-gardeners, and voracious destroyers of what a plant-lover holds in estimation. Beech is the prevailing timber, and there are some noble specimens, with a few Scotch and Silver Firs intermixed. *Abies cephalonica* and *A. brachyphylla* are doing well, but *Cunninghamia lanceolata* looks, as it does everywhere else, rather miserable—an exile, who cannot adapt itself to its new conditions. *Magnolia macrophylla*, fine old Cork-trees, a particularly elegant form of *Cedrus atlantica glauca*, fine Cedars of varied habit—one with a straight unbranched bole of considerable dimensions, and quite different in habit from Cedars generally. That reminds us that in the garden proper near the Gymnocladus is a fine Deodar, one of the finest we know, but which we took at first sight to be a Cedar of Lebanon; till more careful scrutiny revealed the fact that it was a Deodar, and afforded another illustration of Sir Joseph Hooker's dictum, that "habit" alone is a most treacherous guide in discriminating species of Conifers.

Reverting to the pleasure-grounds, we come to an observatory perched upon a hillock, and now used as a gymnasium; and a little further on we come unexpectedly on a stone conservatory placed on a terrace overlooking a slope and the opposite woods. This conservatory is full of Camellias planted out, and in excellent health; among them is one named *conspicua*, brought from Napoleon's residence in Corsica by H.R.H. the Duke of Albany. The undergrowth in the pleasure-grounds is almost entirely common Laurel, kept out down. It is very suitable, but a little more variety and admixture of *Malonia*, *Rhododendrons*, common bracken, or anything else that Master Rabbit might allow to remain, would add variety to the whole. In the midst of the woods we find a memorial structure, in the Gothic style of the period, containing a bust of the Princess Charlotte, and which impresses the spectator with the feeling

that it must have been a good likeness. The view from the terrace in front, looking over the little lake, is very lovely. Hereabouts are the "children's gardens," kept neat and tidy, and overlooking glowing masses of Rhododendron and Azaleas; and so we wander mid the trees, till at length we find ourselves once more within the circuit of the much-benailed walls.

These serve to remind us that Claremont has had some distinguished gardeners in its time. John Greening, gardener to the Duke of Newcastle, raised the Claremont Nectarine from the Elruge so long ago as 1750. Many years later, when Orchid culture was little practiced and less understood, it is recorded that Fairbairn succeeded in inducing *Aerides odoratum* to produce flowers by placing it in a basket of spent tan and moss hung in the Pine-stove and dipped in a bucket of water half a dozen times a day (H. J. Veitch, *Journal of Royal Horticultural Society*, xi., p. 115). In later years McIntosh, the author of the book *The Garden* had sway here. Subsequently he went to Dalkeith, where the Queen mentions in *Leaves from the Journal of our Life in the Highlands*, having seen "McIntosh, who was formerly gardener at Claremont," and who was then engaged in the construction of the new garden (1842).

But we have come to the end of our walk, and thanking Mr. Burrell for his courtesies, we betake ourselves once more to the dusty high road and the quiet station, whose size, together with rising houses and platted areas near it, give indications that the rural character of the place will speedily be very much a thing of the past. Happily, Claremont will still remain Claremont.

PLANTS OF THE VICTORIAN ERA. ORCHIDS.

THE introduction of Orchids into British gardens commenced more than 150 years ago, and these now favourite plants then considered curiosities, were subjected to very remarkable treatment, well calculated to suppress their beauties. Their numbers, however, steadily increased, until, in 1818, the typical *Cattleya labiata* presented one of the first of the more ornate section of Orchids, but the interest it excited was not followed up, and Orchids still remained rare and curious as they had always been until almost contemporaneously with the Accession to the Throne of Queen Victoria. Then a new era soon began, and Orchids were taken in hand with enthusiasm, both as to their introduction and culture, one of the pioneers being the veteran, James Bateman. A very remarkable event at once presents itself in considering the showy section of *Cattleya*, and that is, that the fine *Cattleya Mossie*, which created such a sensation about the first year of Her Majesty's reign, should, throughout the intervening sixty years, remain a favourite plant, and that a variety of it should be illustrated in the issue of the *Gardeners' Chronicle* for June 12 as *Cattleya Mossie* "Queen-Empress."

Practically all the more showy Orchids in gardens have been introduced during the Victorian Era, a great many of them, such as the Mexican *Laëlia*, *Cattleya Skinneri*, and many others, having either been discovered or first flowered in 1837. Soon after came the discovery by Hartweg of the now-famous *Odontoglossum crispum*, which on its introduction was named in honour of Her Royal Highness, Alexandra, Princess of Wales. Still nearer our day, the showy *Miltonias* and *Dendrobium Phalaenopsis*

were brought out, and one of the most important events in Orchid history occurred, viz., the re-introduction of the typical *Cattleya labiata*, so frequently sought for since its introduction in 1818, and with it the beautiful natural hybrid, *Lælio-Cattleya Victoria Regina*, illustrated in our issue for June 26, 1892.

Primarily, the successful culture of Orchids in the present day is due to the careful observation of their habits and requirements made during the past sixty years, and the consequent improvements in the structures in which they are grown, and especially in the matter of heating and ventilation. When the culture of these plants came to be better understood, and their real beauties revealed, extensive collections were formed. But in the olden time the collectors were satisfied with one or two specimens of a kind. Later, when the beauty and usefulness of their flowers for decorative purposes came to be known, some growers

which, when turned out of the pot, would weigh but two or three ounces.

The commercial interest in Orchids is, and always has been, strong; and as soon as large quantities of showy kinds were acquired cheaply, the market-grower and florist for cut flowers came to the front; and now there are many establishments, both nurserymen's and amateurs', who derive large sums of money from cut-blooms of Orchids. Sometimes they are dear, sometimes cheap, and the variation in price only tends to popularise them, for they are to be seen at State functions, and also, when the market is easy, in the baskets of the street-seller of button-hole flowers.

But the greatest departure in the reign of Victoria has been the raising of hybrid Orchids in gardens at home—an industry which runs introduction by importation very close, and which should commend itself to all, as the benefits arising from the home-made article are evident.

And what does this hasty review disclose? The careful and successful pursuit of beautiful and interesting subjects made easy as one consequence of a long reign of peace and progress.

VEGETABLES, 1837—1897.

In reviewing the relative conditions of vegetable culture, now and sixty years since, it will not do to leap to the conclusion that there has been so marked a development as has characterised fruit culture. We grow the bulk of our vegetables in the open air now, as our fathers did early in the century, and those who have read the cultural details given in the "thirties," with respect to all kinds of vegetables, have to admit that these details apply with similar force to the present time. In the case of a few subjects, notably Tomatos and Cucumbers, culture under glass has become much more common, and for obvious reasons. If, however, we refer only to what are common out-of-door vegetables, the principles of cultivation, as well as the details, largely remain the same now as then. It is rather in the direction of variation of products that so marked a change has been made. We have, however, managed pretty well to assist in the survival of the fittest, but myriads of apparently good things have been put into commerce, grown for a few years, then ignored, and finally have entirely vanished from gardens. That such will be the fate of many, even of assumed specially good varieties that figure prominently in seedsman's catalogues now, there can be no doubt. Even if no advance be made, the production of novelties will still go on, but, at least, there is every reason to hope that what development there is will be in the form of improvement, even if it come henceforth very slowly.

It has not been an easy task to obtain any exact presentation of the chief varieties of various vegetables in commerce in 1837. Some useful information has been obtained from various sources, and perhaps the most exact from the *Transactions of the Royal Horticultural Society* during the "thirties," which were then edited by Mr. Knight. That distinguished gardener wrote then with respect to the production of novelties in vegetables in very much the same strain that so many others much more recently have written, but still so uselessly:—"It is seldom that any new vegetables are raised of decided superior quality, and there seems to be no intelligible use in perpetuating kinds whose only merit is that of being different in some trifling particular."



FIG. 150.—THE ORIGINAL PETUNIA, 1837.
(SEE P. 416.)

confined themselves to the showy kinds they liked best, and of each of these they grew large numbers. Then came the opportunity of the professional importer of Orchids, who, seeing that he could find a market for large quantities of each of the showy species, imported many specimens of a few kinds rather than a few specimens of many species, sometimes overdoing the market. But enthusiasm was strong, and a way of equalising matters was soon found, so that while the value of the bulk of ordinary species and varieties depreciated, that of the more rare and extraordinary forms of variable species increased, first in a mild way by doubling or trebling; then, as demand increased, and the supply failed to keep up, with it one hundred pounds, which was thought the highest possible price to be given for a rare variety. The wary shook their heads as they had been doing when big prices were spoken of for the last half-century, and prophesied collapse. But, not a bit of it! the prices for phenomenal varieties still went up, and in our day we hear of two or three hundred pounds being paid for a specimen

What would he have said or written to-day of the varieties had he been alive? If this variation has been trifling in relation to successful varieties, at least in many directions it has been considerable in amount; hence sixty years of raising and selection have left a potent impression on the vegetables of 1897, and we of to-day who grow and consume them are greatly the gainers.

ASPARAGUS

will come first in our review. We have made no great advance in variety, as the old officialis is still the one generally grown. The chief addition has been found in Connover's Colossal and the Purple Argentine varieties. But during many years of constant selection with the same variety, much has been done to improve the stock. As a rule now, we neither grow in beds raised high above the surrounding soil, nor allow the plants to remain so long *in situ*. Preferably we plant on the

whilst Johnson's Wonderful and the Seville have been marked additions also; indeed, the latter, under various appellations, has become the most popular garden-Bean of the section. As to culture, here again little difference exists. Runner-Beans, in the early years, included the Scarlet and White Dutch, the Painted Lady, Case-knife, and one or two others of no special merit. Now we grow none of these practically, the scarlet form having been superseded by the better long-podded forms, which may be briefly referred to as of the No Plus Ultra type, so that now the pods, produced in exceeding abundance, instead of being short, range from 10 to 12 inches long, and are then tender and edible. Perhaps more of space to the plants is now given, and deeper culture, as well as more ample feeding than was furnished in the early years; yet generally culture remains very much as before. An interesting addition to this section of Beans is found in the carefully-selected runner dwarfs, if

It is interesting to inquire how the appellation "French" became so commonly attached to these Beans. In old days, besides being classed as Haricots, they were called Kidney Beans. It seems sufficient for all purposes now to refer to them as Dwarfs, and to the climbing section as Runners. Generally, with regard to these, culture remains as before.

BEETS

have increased materially in variety, though culture remains to-day much the same. The best variety in 1837 seems to have been the Red Castlenaudry. It would be a rare thing to find that old variety listed now. We have in its place two or three dozen of others, some diverse in form, some only in name; but our best are without doubt first-rate in form, in flesh, and in flavour. Dell's, Nutting's, Dewar's, the Cheltenham Green-top, and a few others constitute the chief types, of which so many are selections. There has been material gain in the introduction of the Egyptian Turnip-rooted, or Blood-red, as through its agency good edible Beetroot may now be obtained much earlier in the summer than was once the case. Whilst we have thus gained in Beets, the ordinary methods of culture have not greatly changed.

BRASSICA.

Broccoli, now spelled with two c's, but formerly with one only, is very much still as it was in '37. True, we have added materially to the number of varieties, especially the late ones; but even then there were some good ones, such as Early White, Knight's Protecting, Brimstone, Miller's Late White, &c.; and the Purple Sprouting. We have added some superior forms, and notably fine late ones, but Broccolis remain still only moderately hardy, and sometimes they are killed wholesale in hard winters. The old growers' methods of culture are very much those of to-day; and valuable as this section of the Brassica family is, it is still, one of the most untrustworthy.

Brussels Sprouts.—Far more certain in usefulness are Brussels Sprouts. About one variety, and that known as the Imported, a good form, too, was cultivated sixty years ago. We have now several, and some excellent selections from the "Imported;" others much stronger in growth, and productive of huge sprouts, are not by all regarded as improvements. However, these strong growers have been largely grown by the market-men in their fields, where the coarser tendencies are materially repressed, with great profit. Generally, the vegetable has changed but little after all.

Cabbages were in variety numerous, at least a dozen varieties being commonly quoted in 1837, we have still Battersea, Vauachi, Early York or Spotborough, Large York, Sugar Loaf, London Market, &c., and of picklers, the Red Dutch. Of these latter, the dwarf Blood-red is especially in gardens a great improvement, not only in compactness but in colour. As to white Cabbages, we now happily are giving much greater preference to those of comparatively small-hearted precocious varieties, of which the popular Ellam's Early is such a good representative, and of which section alone there are many so-called selections in the market. The big Cabbages are now in less favour, but in early and good-sized forms the French Les Etampes has proved to be a capital addition. As to culture nothing fresh is practised, we find



FIG. 160.—DOUBLE FETUNIA.

(Exhibited at the Temple Show by Messrs Sander & Co. See p. 416.)

level, give the plants more room, continue raising some new ones yearly, and making new breadths, so that there is always an annual breadth of established roots to be lifted for winter-forcing; otherwise, in general treatment, culture is not widely dissimilar.

ARTICHOKE (GLOBE).

differ little from the form generally cultivated in the thirties, neither does that culture appreciably vary. Very much may be said of the Jerusalem or tuberous Artichoke, the exception being the undoubted gain in the introduction of the white-tubered variety. General culture differs little or none.

BEANS,

on the other hand, show marked advance. Of Broad and Longpod forms, the old Green Windsor is still one of the best, as it was in 1837; and of Longpods we still have the Early Green and the Dutch, with the Dwarf Fan-cluster. But of the latter, Beck's Green Gem is an improvement undoubtedly;

they may be so described, that well-known variety, Canadian Wonder, having developed such climbing tendencies that these have been utilised to constitute a separate section of smooth-podded runners. The Butter Beans, also, have become materially popularised of late, and, once ignored, now are found in many gardens, where their delicious pods find appreciation.

Of dwarf Beans, invariably in the thirties termed "Haricots," probably at first more grown for their ripe seed than for their tender pods, the best known were Early Cream, Early Purple-speckled, and the Negro. We have many varieties now, but except for early forcing, where very dwarf varieties are grown, the general best of to-day, whether for late forcing in pots or for outdoor culture are Osborne's Forcing No Plus Ultra, the Long-podded Negro, and Canadian Wonder. These latter three are, perhaps, more widely grown than are any others. They are all so good as to be difficult to excel, in spite of the frequent introduction of other forms.

no better practices than were those of our forefathers.

Cauliflowers.—In the case of this kind of vegetable, a most important one, some material progression is evident. In the thirties, the most commonly grown were Early London, necessarily wintered in frames or under hand-lights, to have early heads; and Walcheron, whilst the large Asiatic and Purple Cape were autumn forms. Now we have that early dwarf form, of which the early Snowball is the type, and which can be induced to head-in from January sowings under glass, sooner than the autumn-sown "Londons" would do, and may even be grown in frames or in pits, with moderate gain. Then for autumn purposes, the fine Autumn Giant and its selections have proved to be splendid additions to our stocks, so that in gardens or in fields the Cauliflower can be had over a long autumn in great abundance, and the heads are so cheap as to be accessible to the poorest when in season. Our chief cultural change is found now in sowing less in the autumn for wintering, and in raising the more precocious varieties from seed under glass early in the year, planting out later comparatively close together on warm borders.

(To be continued.)

PETUNIAS, 1837—1897.

AMONG the great and stirring events we are now commemorating in connection with the accession of Her Majesty in 1837, it is not without interest to horticulturists to recall that in that year the first hybrid Petunia was brought out. *P. violacea* (purple) and *P. nyctaginiflora* (white) had been introduced some years previously, but their flowers were inconspicuous as compared with those of the first hybrid, and more especially in comparison with the gigantic varieties we now have. These are the result, in the first instance, of the combination of the two species above named. Contrary to what happens in some hybrids, the Petunia hybrids are as fertile as the species themselves. Moreover, they intercross freely, and thus we have obtained the great variety which now decorate our gardens and houses. Our figure of the original florist's Petunia was taken from the *Botanical Magazine* (1837), t. 3556. It is curious to read now the comment of the editor. "It must be confessed that here, as in many other vegetable productions, the art and skill of the horticulturalist has improved nature. Cultivation alone has, indeed, very much increased the size of the flowers and foliage of this plant, so that it can scarcely be recognised as belonging to the same species as the native specimens sent by Mr. Tweedie." [What then is it now? Ed.] Fig. 160 is a representation of a double rosey lilac-coloured variety, exhibited at the Temple Show by Messrs. Sander, of St. Albans. The single variety shown at fig. 161, is from a bloom obligingly furnished us by Messrs. Jas. Carter of High Holborn, whose strain of these plants is in deservedly high repute. Large as it is, it is not so large as some that have been produced. The doubled condition generally arises from the substitution of petals for stamens, and sometimes from the multiplication or increased number of the petals themselves, as in Messrs. Sander's Petunia. In some forms the margin of the corolla is green and leaf-like, the other portions being of a violet hue; in this variety the stamens are also frequently replaced by leaves, the filament of the stamen answering to the stalk of the leaf, while the anther is replaced by the blade.

NEW OR NOTEWORTHY PLANTS.

DENDROBIUM PAPHIO, n. sp., Lohrer.*

A CHARMING species of the crumenatum group. Its large, solitary, pale rose-coloured flowers hang down from their thin, grass-like stems in great profusion, resembling butterflies suspended in the air. The sepals and petals of the nearly 2-inch-wide flowers are ovate, and the broad, undulated lip is long, stipitate, with a few purple veins. The fragrant flowers last only one or two days. *A. Lohrer, Manila.*

ORCHID NOTES AND GLEANINGS.

LELIA PURPURATA FASTUOSA, WARBURTON'S VAR.

AMONG the *Lælia purpurata* of recent importation have cropped up some extra dark varieties, in which the segments approach in hue the high colour of the lip the writer described in the *Gardeners' Chronicle* of 1896, vol. xix., and to that supplementary description, illustrated, July 11 the same year, vol. xx., of the wonderful *Lælia purpurata* Ashworthiana, with petals as broad as those of a fair-sized Cattleya, and with a lip of surpassing brilliancy. That variety was staged at the Temple Show of this year, and received, as it deserved to do, a First-class Certificate. The one now under notice was also shown, and received an Award of Merit. They are both prime varieties, as each are beautiful, and each distinct from novel. Mr. Ashworth's plant was imported by Cowan & Co., Garston; Mr. Warburton's came from the Messrs. Linden, Brussels. Having the best opportunities of seeing both the varieties in the height of floral beauty, I now append a description of the fine prize variety:—

Sepals as in the normal form of the species, flamed on a lightish ground; petals, $1\frac{1}{2}$ inches breadth; length of each, $3\frac{1}{2}$ inches; width across the flower touching 7 inches; highly flamed from the median rib, with numerous radiating Peach-coloured veins. These limbs do not stand out so flat as in Ashworthiana—indeed, they are screwed up, not unlike a *Sarracenia* pitcher, and in this respect spoiling the appearance of the flower. The lip is something magnificent, superior in colour to the variety to which we compare it. It is 3 inches long from base to extremity, the convolute portion being $1\frac{1}{2}$ inch, and the expanded portion, or the blade, is also $1\frac{1}{2}$ inch, and the diameter of the lip is 2 inches. The blade is a marvel of brilliant amethyst colour, nearly solid, and forms a sweeping ovate outline. The convolute portion is of a captivating ruddy shade, broadly margined with white, into which the red lines disappear. The back of the lip is as conspicuous as the front, the whole showing great substance. The column is less convex than the normal form, and the pollinia are white.

CATLEYA SUPERBA.

After all the ups and downs of the history of the cultivation of *Catleya superba*, one is glad to chronicle the well doing of a score of the plants in one of the little houses of D. B. Rappart, Esq., The Promenade, Lisard, Cheshire (Mr. Nicholson, gr.). The original batches imported a quarter of a century and longer ago have all disappeared, growing less and less every year under culture. Mr. Bewley of Dublin thought he had mastered their cultivation when he tied them to large blocks of hard wood, and put them under double-glass roofs. He enamoured even the late James Veitch, who told me

* *Dendrobium Paphio*, n. sp.—Ebilbe, cespitosum, subpendulum, ramosissimum; ramulis tenuibus; folia e basi auriculata linearia, $1\frac{1}{2}$ -2 pollicaria, vaginis virido purpureis; flores in apice ramulorum ceflorum solitarii, apertis 2 pollicares, penduli, extus pallide rosei intus albi, sepalis petalisque subaequalibus, calicis semipollicaris, subrotundis; labellum longe unguiculatum, stipite canaliculato flavo, limbo rotundato crenulato-undulato, striis tribus et nervis lateribus purpureis; columna apice bicornuta, alba, antice utrinque liliis binis purpureis. Ins. A. Lohrer.

he sent over the late Zadok Stevens and John Dornay to see for themselves. They reported more than favourably of it, and the consequence was that double glass roofs at Chelsea was the order of the day, until it was found out that they did more harm than good, particularly in summer, and off they had to come. The plants in question at Lisard are suspended in low-roofed houses, mostly in baskets, and they are in the pink of health, and showing nearly every one of their sheaths, some advancing into flower. The roots are seeking their way through the partitioned chip-baskets, and the leaves are strong and healthy. Up to now, the young bulbs are increasing in bulk, and we look forward to secure some of them before either of the Orchid committees. The climate on the banks of the Mersey is an excellent one, the moisture being agreeable, and the temperature encouraging, which may account for the satisfactory state of growth up to now—will it last? *J. Anderson.*

THE ROSARY.

HYBRID TEA ROSES.

SOME years ago it was decided by the National Rose Society that several varieties of considerable importance, previously denominated hybrid perpetuals, should thenceforth be regarded as hybrid Teas. This class has of late years been materially enlarged by contributions from the rosarians of Britain, Germany, and France. Among the more valuable introductions for which we are indebted to the French raisers are Gustave Regis, not long since highly spoken of by "Wild Rose" in this journal for the beauty of its buds, though he indicated its limitations when fully blown; Madame Fernet Ducher, canary-yellow in colour, with a deeper shading in the centre—a Rose of great decorative capability, which I cannot but regard as one of the finest of the hybrid Teas; Marquis of Salisbury, also a very abundant bloomer, of brilliant scarlet hue; Marquis Litta, a Rose of vigorous growth, with large flowers of carnation-pink complexion, generally accounted an improvement upon its immediate predecessor, La Fraicheur; and Caroline Testout, which is equally, in my opinion, an advance upon La France—being alike in form and in colour, decidedly superior to the parent Rosa. The latter, however, still retains its immense popularity; and it must always remain, by reason of its sweetness, supremely attractive. Augustine Guinoiseau has been called somewhat erroneously, a "white La France"; but, though it greatly resembles its parent in everything save colour, its hue is not an absolute white, being most decidedly suffused with rose. It is, however, the nearest approximation to the ideal so much desiderated, that has yet been found. Among other highly popular French hybrid Teas is Charlotte Guillemet, a variety of great promise, which I had in flower in my garden for the first time last year, but which, though described in the catalogues as very free-flowering, did not produce too many of its beautiful ivory-white blooms; and Bardon Job, raised by Nabonnand in 1857, of very vivid crimson complexion, but only semi-double, through this limitation does not affect its great value for artistic and decorative effect. Gloire Lyonnaise, one of the most beautiful productions of the late M. Guillot, of Lyons, to whom we are indebted for many other varieties of equal value and renown, is of considerably older date than those already characterised; but not so venerable as Captain Christy, which was introduced contemporaneously with the English Cheshunt Hybrid by M. Lacharme in 1873.

Grand Duc A. de Luxembourg and Souvenir de Madame Eugénie Verdier are meritorious French Roses of recent introduction. Kaiserin Augusta Victoria is a German Hybrid Tea of the highest merit; its colour, pale primrose, is very fascinating, and its flowers have the substance of Souvenir de la Malmaison or Gloire de Dijon. This is undoubtedly a great acquisition; among modern Roses of its special class, the one most likely, by reason of its commanding attributes, to endure.

Of British hybrid Teas, the most important are Viscountess Folkestone, Lady Mary Fitzwilliam, whose chief limitation is its indifferent growth, though it makes some compensation in the dimensions of its imposing and richly-fragrant flowers; Lady Henry Grosvenor and Clara Watson, associated with the memory of Mr. Henry Bennet; Chestnut Hybrid, a climbing Rose of great merit, remarkable alike for its fragrance, vigour of growth, and great productiveness; Duchess of Albany, a dark La France; Princess May, a charming pink hybrid, between Gloire de Dijon and another variety possessing a colour more akin to its own; the White Lady, a beautiful daughter of Lady Mary Fitzwilliam; and those ema-

HOME CORRESPONDENCE.

ROSES.—I strongly hold that any article, however sketchy, upon Roses originated during the reign of Victoria, without some reference to the originators of such varieties as *Modena*, the grandest Tea Rose Britain has produced; *Mrs. Paul*, the noblest of the Bourbon family; *Duke of Albany*, the most impressive in its colouring, fulness, and exquisite imbrication of all the dark, velvety-crimson hybrid perpetuals; *Queen Mab*, the most brilliantly-coloured of the Chinas; *Fride of Waltham*, indispensable for exhibition; *Carnegie Pillar*, the most decorative single Rose of the last decade that England has given us; *Clio*, *Spenser*, *Enchantress*, and *Empress Alex-*

Herts, Oxford, and Cambridge. Owing to the coolness of the previous night, and the stormy character of the exhibition-day, the blooms stood remarkably well, and were, as a rule, as fresh late in the afternoon as when staged in the morning. *E. M., Berchamsted.*

GARDEN PINKS.—A very marked feature of the newer race of Garden Pinks is found in their tendency to bloom freely in the autumn. This is especially the case with young plants from previous season's pipings, carrying few flowers in June, but heads of bloom in September, when Pink flowers are just as acceptable as at any time. Garden Pinks have suffered a good deal in reputation because they have been in relation to culture rather neglected than cared for. It is important, to see them in their best form, that pipings be inserted in sandy soil, either under handlights or beneath a north wall early in July. A few scores so set in assure almost absolutely numerous plants to go out into the borders in the autumn, and these flowering moderately the following summer, do so well in the autumn, and then, having become broad clumps, flower most profusely the following year. After that, they may be destroyed, or if there has been a failure with the pipings then lifted, pulled to pieces, and replanted in October, they soon become established plants again. Whilst our old border Pinks, white and pink in colour, are far too common alone in gardens, *Mrs. Sinkius* and *Her Majesty*, though the flowers are large, are yet very ungainly, because the pods often burst, and the petals become a mass of loose rags. Far better are the old *Paddington*, a pretty red Pink, the pure white *Snowflake*, and *Albinos*, our best of this hue, and the many seedling varieties, named and unnamed, in various colours, *Mr. B. Ladham*s and *Mr. R. Dean* have raised and put into commerce. Such flowers are deliciously perfumed, and are pleasing for bouqueting, but as garden plants the beauty is most evident in a growing state. A garden set apart for Pinks exclusively might now be made a striking feature in any good place. *A. L.*

DIAMOND JUBILEE SPECIALS.—It was a happy thought on the part of *Mr. Edwin Poole*, head-gardener to *Lady Cave*, *Cleve Hill*, *Downend*, near *Bristol*, to commemorate *Her Majesty's* reign by himself collecting the winners in each class, and to enable him to add twenty-two classes of "Diamond Jubilee Specials" to the schedule of the local flower show, there being from three to four prizes offered in each class, these varying in value from 10s. downwards, and to be competed for by *bona fide* agricultural labourers, being members of the *Mangotsfield* branch of the *N. A. U.* The "specials" include prizes for collections of vegetables, of window-grown plants, of table-Ferns, of ornamental foliage-plants, &c. A silver medal being given by *G. Graham, Esq.*, for the best collection of "vegetables, fruit, and flowers, set up with an eye to effect." Prizes are also offered for coast-bouquets, sprays, *Roses*, allotments, &c. In a few classes, the 2nd, 3rd, and 4th prizes consist of garden tools. *H. W. W.*

REDUCING THE HEIGHT OF TALL TREE-FERNS.—I am obliged to *Mr. Fletcher* for his remarks on this subject. As, however, circumstances vary, everyone must judge for himself as to the best and quickest method to be adopted in his particular case. According to *Mr. Fletcher*, he cuts 12 inches off the bottom of his *Alsophila Moorei* every second year, and also adds that it grows as luxuriantly as ever. If after making allowance for two years' growth, surely there cannot be much reduction in height. It was desired to reduce the height of the Fern I wrote of—*Cyathea medullaris*—9 to 10 feet. This was managed by sinking the top of the ball a foot or so in the ground when replanting. But I fear that had we adopted *Mr. Fletcher's* 6 inches per annum method, we should find life too short for the end to be attained. As I said before, we placed the box 7 feet up the stem, and as few or no roots were visible at this part of the stem, we had to wait for them to grow. *Clunary* the method adopted may have been, but as to its being unsightly, surely a little ingenuity might render a neatly-made and painted box not so very much more unsightly than one lower down, i.e., on the floor. The box in question was almost entirely hid by the growth of other Ferns, &c. *James Barber*. [We think that our correspondent shows good cause for his method. *Ed.*]

LATE BROCCOLI.—In our late district, the variety *Sutton's Late Queen* has never failed with us to produce good heads till late in the present month. I am cutting daily nice heads, which may be served at

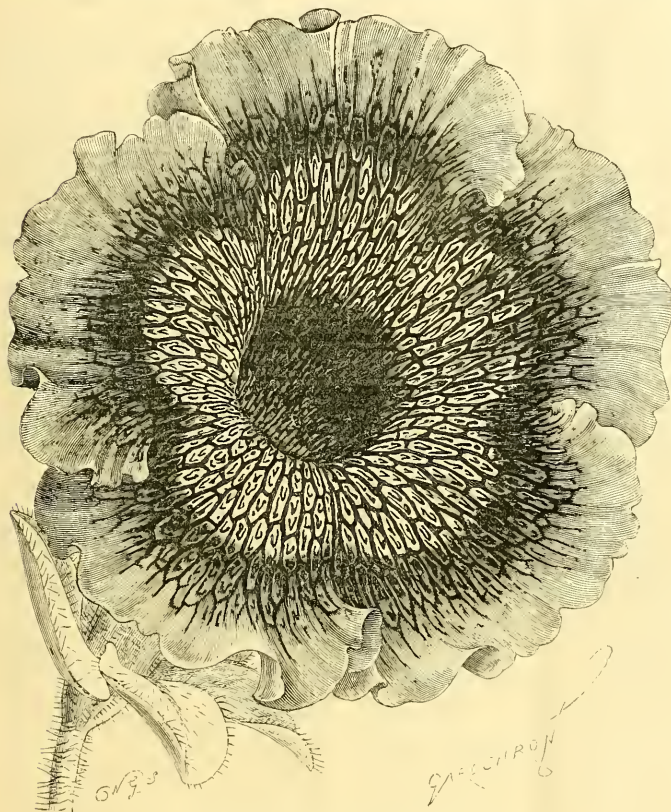


FIG. 161.—A MODERN PETUNIA.

(From a specimen sent by Messrs. James Carter & Co. See p. 410.)

nations from Newtownards of the greatest attractiveness, one of them a Gold Medalist of the National Rose Society, *Marjorie*, and *Mrs. W. J. Grant*—of which the former is a Rose of the sweetest and gentlest description, though not of remarkably robust growth; while the latter inherits the finest attributes of *La France*.

The hybrid Tea Roses require no eulogium; in any representative garden where they are adequately and extensively cultivated, they can speak for themselves. In them may be found the strength and majesty of the hybrid perpetuals, combined with the delicate fragrance and graceful foliage of the Teas. They are, therefore, invaluable for garden cultivation. *David R. Williamson.*

andra of Russia, is not likely to be accounted adequate by men whose achievements have been such as these. *W.*

THE PORTSMOUTH ROSE SHOW.—A few particulars respecting the show held by the National Rose Society at *Portsmouth* on the 18th inst., may be of interest, as it took place at an earlier date than any previous exhibition of the Society. The total number of blooms staged in competition was 1660, or a smaller number than at any other National Rose Society show yet held. In this calculation no account is taken of the beautiful display of garden Roses at this or previous shows. There were in all thirty-seven exhibitors who came from the following counties:—*Devon*, *Dorset*, *Somerset*, *Hants* (including *Isle of Wight*), *Kent*, *Surrey*, *Essex*, *Bucks*,

table whole, from plants raised from three-year-old seed sown about the middle of the month of May, 1896. My stock of plants of the present year are from the same batch of seed, now four years old, which came up very thickly from a sowing made on May 11. I have seed of the same age for trial next year. There is variety in the leaf, some being more curly than others; and the heads keep turning in for three weeks or longer. I cut the first on June 2, which was ten days later than last year. The habit is dwarf as I grow them, that is, on firm ground. This variety of Broccoli is one of the greatest helps that a gardener without appliances can have for bringing on early Cauliflowers—at least, I find it so. *George Bates.*

PLANTS OF THE VICTORIAN ERA.

HARDY TREES AND SHRUBS.

(Continued from p. 399.)

AMONG trees and shrubs we have also a large number deserving notice as valuable additions to our parks and shrubberies; and taking them alphabetically, the first place must be given to the *Aucuba*, for although the common "Spotted Laurel," as it is generally called, came to us as early as 1783, it was only the female plant, and it was left to Robert Fortune to send us the first males. The well-known *Aucuba* is maculated with yellow, going, as it were, into oriental mourning for its husband, which, as he did not appear in Europe till more than half a century had elapsed, she might well have given up as lost. Next, we have another Japanese shrub, the *Azalea mollis*, flowering freely, with exceptionally rich and brilliant coloured trusses of flower, whose only fault is that they are so very short-lived.

Ceanothus azureus and *Escallonia rubra* and *macrantha* were also introduced to commerce in the early part of the reign, the former having been greatly improved by the hybridists, the variety, *Gloire de Versailles*, being among the finest, but both unfortunately are restricted to the southern and western shores of our country, as they are not perfectly hardy.

The interesting *Clematis* (*Atrageae*) *coccinea* has but lately come to us, and except for its novel colour in that genus, need not be included here, but Messrs. Jackman have taken it in hand, and we have, as a result, three novelties in which the prevailing colour is scarlet or bright pink, foreshadowing many interesting possibilities for the hybridist. In 1844 we were enriched by the introduction of *Weigela rosea*, the parent of a number of pleasing varieties, which give us their flowers in May and June, and range in colour from bright pink to deep maroon red, while the pure white form, though more tender (*W. hortensis nivea*) is both an excellent pot-plant for force and a desirable shrub for a sheltered border. The first *Deutzia*, *D. scabra*, was brought to Britain some years (1833) before Queen Victoria was crowned, but we have since received the species *D. gracilis* and *D. crenata*, and many hybrids from Lemoine, all very useful shrubs, either for the borders or for forcing; all are interesting to the owners of a microscope even of modest power, as the leaf has beautiful stellate hairs on the upper surface, which, by reflected light, look like frosted silver stars against the bright green colour of the leaf. In 1838 was sent us the grand foliaged *Aralia japonica* to enrich our shrubberies and lawns; while we had the *Elaeagnus*, but since then from Japan many finer varieties through Von Siebold and Veitch. A Japanese shrub, now quite indispensable in gardens near the sea, though unfortunately not hardy inland, is the *Euonymus japonicus*, which was introduced in 1833, but was not sold

in nurseries till some years later, and therefore must rank among our Jubilee gems; the later varieties, "ovata," and its gold and silver variegated sports making most useful pot-plants or shrubs for window decoration, which may be said to have originated in the last twenty years of the present reign, and which may be claimed as totally altering the appearance of our squares and streets since its almost universal adoption. I must, however, only allude to many choice and useful acquisitions of the period, viz., *Cytisus scoparius* var. *Andreanus*, the unique and exceedingly useful *Hydrangea paniculata grandiflora*, and *H. hortensis alba* "Dr. Hogg;" and among the very latest novelties in this genus the *H. japonica* var. exhibited by Messrs. J. Veitch & Sons at the Temple Show, bearing barren flowers after its kind, nearly if not quite 2 inches in diameter, and so bright a shade of rose as to closely approach scarlet.

Among the leading attractions of the grand Temple Show, May 26 to 28, were the hardy shrubs new to commerce, staged by Messrs. J. Veitch & Son, of Chelsea, and Fisher Holmes & Co. of Sheffield, the Japanese Maples in all their elegant and varied forms, making a chaste groundwork; other good things being *Cytisus praecox* and *Olearia stellaris*, with its masses of white-scented flowers contrasting well with the stiff and erect growth of *Clethra alnifolia*; a good new *Weigela* *Eva Ratke*, and some good examples of a new *Andromeda speciosa cassinifolia* with wax-like flowers, while some good *Azalea sinensis* x *Mollis* showed the great field open to the hybridist in this direction. Messrs. Fisher Holmes also used Japanese Maples freely—would that they were quite hardy! and also staged the variegated form of *Rubus fruticosus*, and a new Japanese variegated *Andromeda*, with a good Elder, *Sambucus racemosa plumosa aurea*, all of which plants are worthy of the Jubilee year; while a Dogwood called *Cornus Späthii*, with golden variegated leaves, was most attractive, and said to be the best variegated leaved plant for the North, and more hardy than the useful *Acer Negundo variegatum*.

Nor must the Tree Ivies be omitted, as they originated during the period 1887-1897, and now are great in variety, and most useful for winter-hedging.

The Laurel, most useful among evergreen shrubs, has been wonderfully improved, one vigorous and hardy novelty being *Prunus laurocerasus* var. *caucasicus*; while the round-leaved form, *P. laurocerasus rotundifolius*, has at once leaped to eminence; and the Portugal Laurel has given us a fine variety in "myrtifolia," known in English nurseries as Knight's pyramidal form; and the deservedly admired, but somewhat tender, *Laurustinus* (*Viburnum Tinus*) has given us a grand seedling sport in "hirsutus," or nigrescens of the Continental nurseries, for it is not only more vigorous and erect in growth, but the panicles of flowers are larger, while it is more hardy. The Privet, too, has given us a grand acquisition in *Ligustrum ovalifolium*, no plant making a quicker or better evergreen hedge, while its golden variegated form will lend variety and colour to our shrubberies. All succeed in the smoke of towns and cities, as well as in exposed positions by the seaside. Japan has also contributed some useful species, among which the leathery-leaved Privet, *L. coriaceum*, is the most distinct.

Both the green-leaved and golden variegated-leaved evergreen Honeyuckles, as they are

popularly called, *L. brachypoda* and *L. b. aurea reticulata*, are plants of the period we are now commemorating, both hailing from Japan, though natives of China; while the brilliant scarlet trumpet Honeyuckle was introduced from Carolina, in the time of Cromwell, who, as it might be surmised, was but a poor encourager of the gardener's art. *Experience.*

(To be continued.)

THE WEEK'S WORK.

THE ORCHID HOUSES.

By W. H. WALES, Orchid Grower, Burford, Dorking.

Cymbidium Devonianum, now making growths, should be raised up to the light in the intermediate house, and be afforded plenty of water at the root till growth is finished.

Leptotes.—When well flowered, *Leptotes bicolor* forms a pretty object in the Cattleya house, and the plant will now be starting to make roots freely. It is a species which resents having its roots disturbed at any time, and rooting sometimes causes the plant to deteriorate. If the rhizomes have grown over the edges of the pan or basket, and the roots cling to the latter, do not interfere with them in any way, but pick out the decayed potting materials, and substitute fresh, hanging the plant in a light part of the Cattleya house, and affording copious waterings each time the compost becomes quite dry.

Dendrobium Brymerianum and *D. cymbidioides* appear to thrive best in the Cattleya-house, and both are species that now begin to make growth; they may be repotted at this season. The former does best in a pot stood upon the stage with the Cattleya, the latter in a shallow, perforated pan, or in a basket hung close to the roof. *D. macrophyllum* Richardii variety, and *D. m. Veitchianum*, succeed under a similar kind of treatment as *D. cymbidioides*. The singular-looking *D. Cologyne* should be hung near the roof of a house having a temperature intermediate between that of the Cattleya and the *Odontoglossum*-houses.

Cologyne data and others.—This species will now be making roots. These come from the base of the newly-started growths, and if repotting is necessary, it should be done at once. Owing to its rambling habit, it is useless to try and make the plant conform to cultivation in an Orchid-pot; but it will succeed in a long and narrow Teak basket, rooting freely in peat and sphagnum-moss. The plant may also be fastened to a long piece of Tree-Fern stem, where it will do well. The plant is at home at all seasons in a moist, shady part of the intermediate-house. As regards water, the plant requires an abundance during the season of growth, but at other seasons it suffices if the compost be kept just merely moist. Other *Cologyne*s which require a similar cultural treatment, but which grow well in pots, are *C. Rossiana*, *C. speciosa*, *C. glandulosa*, *C. graminifolia*, *C. corrugata*, *C. corymbosa*, *C. Cumingii*, *C. lharbati*, and *C. conferta*. *C. ocellata* grows best in the coolest part of the house. Such dwarf-growing varieties as *C. odoratissima*, *C. spara*, and *C. firmata* should be planted in shallow pans suspended to the roof; *C. fasciata*, *C. Dayana*, and others, which produce long, pendulous flower-scapes, may be hung high. *C. Massangana*, *C. tomentosa*, *C. asperata*, and *C. pandurata* require the warm, moist condition of the East India-house or ordinary stove. The fragrant *C. ochracea* grows and flowers well if placed at the warmer part of the cool-house. Plants of *C. cristata* and its varieties, *C. c. maxima*, *Lemoniana*, *Chatsworth*, and *hololeuca* (alba), if they were repotted at the proper time, will now be re-established, and the amount of water afforded at the root may be gradually increased, continuing to lightly dew the leaves at closing time.

FRUITS UNDER GLASS.

By F. HANAS, Gardener, Eastnor Castle, Leicestershire.

Early Peach-house.—As soon as the fruit has been cleared from this house, cut out all the old bearing wood and other superfluous shoots from the trees, leaving sufficient only to cover the trellis for next year's crop. Tie up any loose shoots, and if any signs of fly or red-spider are observed, give the trees a good syringing after sunset over and under with

strong soft-soap, or a safe insecticide. The following morning a good washing with clean water will be necessary. If the lights are movable, take them off and store in a safe place, but if they are not, afford every possible means of ventilation. Be careful to provide the roots with sufficient moisture.

Succession Houses.—Where fruit is ripening keep the atmosphere rather cooler and dryer by ventilation. Expose each fruit as far as possible to the sun, and if the borders are at all dry, give a moderate quantity of tepid-water. Too much moisture at the roots when the fruit is approaching ripeness may cause it to crack. In houses where the fruit is commencing its last swelling, and the trees are carrying a good crop, afford liberal supplies of liquid-manure. Examine trees where the fruit has finished stoning, and if the crop is too heavy, remove a few of the smallest fruits. It is advisable during early thinnings to leave a few extra fruits on such varieties as the Prince of Wales, which, in this locality, is liable to cast part of its fruit when stoning; Stanwick Elmgie Nectarine is another. Remove all lateral growth, and secure others by tying, and take care that the fruit is well propped up to the light as soon as possible. Later houses should be kept as cool as possible, to prolong the succession. Give abundant supplies of water, and thin out the fruits a few at a time until the required quantity is left. Use the syringes frequently in all these houses until the fruit commences to colour, but avoid morning-syringing in hot localities, especially in the case of Nectarines, for if hot sun gets on them when the fruit is wet, rust is almost sure to ensue. From this time onwards we discontinue morning syringing, and give a good deluging in the afternoon at closing time.

THE FLOWER GARDEN.

By CHARLES HERRIN, Gardener, Droppone, Maidenhead.

Clematis.—Clematis of the Jackmanni type should have the shoots nailed up, or tied where trailed to arches, &c., as often as necessary, to prevent the shoots breaking down or becoming entangled. The early-flowering species of Clematis, as *C. montana*, have now mostly passed the flowering period, and if pruning is necessary, it should now be done, as the new growths for next spring will be the flowering shoots of next spring. In the case of old plants of *C. montana* that have become a thicket of shoots, the best plan is to prune severely to the older wood, and cut all the small shoots right away. Loniceras, climbing Roses, Wistarias, and other climbers, making long and strong growths, will need to have the shoots tied in or nailed, as the case may be.

Violets.—The recent rains have been of much assistance in establishing newly-planted Violet-runners and divisions, and hand-weeding will be required to keep them free from weeds. A thin mulch of leaf-soil or old Mushroom-bed manure will assist in retaining moisture, and encourage a free growth in the plants. When the foliage assumes a yellow tint, it is an almost sure indication of the presence of red-spider, and a thorough syringing, such as will reach the under part of the foliage, should be given, with a solution of Gishurst Compound, or similar dressing, repeating the operation at intervals of a day or two until the pest is eradicated.

General Work.—Bedding out will now be mostly finished, and any work that has been perforce neglected during this busy season should now receive due attention. A general clean-up of the flower-garden and borders should be given precedence. Where a mulching has not been applied to flower-beds, a stirring of the surface soil with a small hoe will assist in promoting a free growth, and keep down small weeds. Remove any dead or decaying leaves and blooms. Peg down Verbenas so as to lower the soil as far as possible. African Marigolds, either in beds or borders, may be topped, to induce a more bushy habit. Lawns require to be mown weekly, and grass edges to walks should be kept closely clipped and the paths clean.

PLANTS UNDER GLASS.

By G. H. MAVCOCK, Gardener, Luton Hoe Park, Luton.

Chrysanthemums.—If these plants are not yet placed in their summer quarters, no time should be lost in getting this done, selecting an open position in the garden where to stand them. It is a safe plan to drive in some stout stakes in lines 5 to 6 feet apart, securing to these two lengths of stout iron wire at 2 feet and 4 feet from the ground, and fasten to these wires the stakes which support the stems of the plants. Beneath the pots place coal-ashes 1 inch deep, and a piece of slate under the central hole in

each pot. To simplify things, the varieties should be arranged in groups together. Those intended for the production of show blooms should be staked with Bamboo-rods forthwith. After very bright sunny days, the plants are much benefited by receiving at about 5 P.M. a good syringing, and all of the collection should be examined three times daily to ascertain if water is required. Attention should be given to the securing of the shoots before these reach a dangerous length, otherwise much loss will occur. On the appearance of aphid on the foliage apply tobacco-powder late in the afternoon, syringing it off the foliage next morning.

Calceolarias.—A first sowing of seed of the herbaceous section may now be made, another taking place about the third week in July. It is important that the production of show plants should be sown, and in sowing a good deal of care is necessary. As the young plants readily damp off, good drainage is of importance, especially in the early stages of growth. The seed-pans should be 3 inches deep, well drained, the cracks being covered with a layer of half-decayed leaves, and on this a mixture consisting of leaf-mould one-third, good fibry loam one-third, and sand and rotten cow-manure in a dry state one-third, well mixed together and then finely sifted, pressing with moderate firmness. Scatter the seeds thinly over the space and just cover them, and no more, with soil and sand passed through a very fine-meshed sieve. If the soil be moist, i.e., neither too wet or too dry, no water need be afforded till some days after sowing, or even not until the plants appear; place the pans on inverted pots in a cold frame, set facing north, with a high wall on the south side. Keep a sharp look out for slugs; do not let the plants suffer from drought; afford air as soon as the plants push through the soil, but do not err in admitting so great a quantity that the frame is raised, or, neither let it be close and muggy, or damping off will happen; and do not let the sun, when it is powerful, shine upon them.

THE KITCHEN GARDEN.

By W. PONS, Gardener, Highclere Castle, Newbury.

Tomatoes Out-of-doors.—Remove every one of the side shoots from the stem, and secure the latter to the soil or fence with broad strands of bast or long shreds; and if the plants are growing away from a wall and against stakes, see that the latter are stout ones, and of the least 4½ feet of their height out of the ground and 1½ deep in it. When three or four clusters of fruit have set, nip out the leading point. Afford water freely, and manure-water occasionally when the fruit is swelling if the weather be warm and dry.

Parsley.—When the leaves of the spring-sown Parsley are fit for gathering, clear the ground of the old crop of plants now running to seed, for they left they greatly exhaust the soil. Whilst the soil is moist from rain, thinnings of Parsley may be dibbled in rows 1 foot apart, and half that distance between the plants into beds or borders of rich soil. When land is in this condition, it is a capital time to make another sowing for coming into use in the winter and later. This last sowing does not usually run to seed early in the succeeding summer. Fresh root forms a good sort of dressing for the land when sowing the seed, and occasional dressings are beneficial to the plants.

Celery.—Continue to plant Celery in trenches, securing a good ball of soil with each plant, and inserting each firmly with a trowel. Plants already established should be afforded manure-water in liberal quantity occasionally, alternating these with applications of plain water. Never let Celery lack moisture at the root, nor bury the earthing-up, but let the heart-leaves of the plants come up unchecked, and the latter acquire size before this is commenced. Preparatory to earthing-up, tie the outer leaves loosely together; this is also a protection against wind. Apply a light mulch of rotten manure over the roots. Celery for exhibition may be blanched by wrapping it in several thicknesses of brown paper for about five weeks or a little longer in the cooler months of autumn. This method of blanching has the advantage of keeping the sticks clean; moreover, water can be applied at the root to the last, which is an important point, but one that it is impossible to carry out when Celery is earthing-up in the usual method.

Leeks for Exhibition require much the same kind of treatment as Celery, except that it is best to earth-up the stems gradually, say, at fortnightly intervals. Liquid manure should be copiously supplied to Leeks, the plants reveling in rich foods.

Cauliflowers.—A good breadth of Cauliflowers may now be planted for the autumn supply, and advancing crops may be afforded liquid-manure if very large and close heads are wanted; but for ordinary uses, a fairly rich soil will produce them of sufficient size without such aids. The land under young plantations of the plants should be dressed with fresh soil and powdered quick-lime, or slugs may destroy the hearts.

THE HARDY FRUIT GARDEN.

By H. W. WARD, Rayleigh, Essex.

The Preparation of the Land on which it is intended to plant Strawberries in August should be undertaken as soon after this date as possible, to allow of it setting and getting consolidated before it is planted. Land which has carried crops of Spinach, late Broccoli, Cauliflowers, Turnips, or Peas, will suit admirably for Strawberries. In order to secure good and abundant crops of fruit, the land should be trenched from 18 to 30 inches deep according to the depth of the tith, two or three thick layers of short-manure being worked in whilst trenching it. If the bottom spit consists of comparatively poor soil, loosen it with digging-fork, and dress it with manure, but leave it in position. If the required runners be layered forthwith in pots 6 to 8 to the case, filled with peaty-soil, time will be saved in establishing them, there being little or no check given the plants when setting them out. In dry weather the layers should be watered overhead daily. Royal Sovereign, Sir Joseph Paxton, Anguste Nicaise, British Queen, Guntton Park, Helena Gloede (late), and Oxonian (late), are seven varieties which it would be difficult to beat for cropping, size of berry, and flavour. It is a matter of importance that the points of layered runners should be kept from extending by nipping them out. If these plants which have been forced have received proper attention since they were removed from the forcing-houses, they may also be planted out on similarly prepared land as that intended to be planted with layers, and they will yield good crops of fruit next year. Plants of the early varieties from which the fruit was gathered in March produce ripe fruits in August and September, but to do this they should be planted out early in May. Mulchings of dung benefit these plants greatly. Fruit in forced plants in favourable seasons produce fruit in some abundance, filling up a void in the supply of soft manure, and being themselves succeeded by the alpine Strawberry, which bears fruit till the frosts come.

THE APIARY.

By EXPERT.

Artificial Honey.—At a recent meeting of the Victorian Beekeeper's Association, at which the members discussed the subject of imitation honey, which is said to be "flooding the Melbourne market," Mr. Field, a practical chemist, gave an account of some analyses he had made of samples of both pure honey and this imitation. He showed the members a simple method of testing what is pure and what manufactured honey, by adding a little pure alcohol to honey or its imitation dissolved in an equal volume of water. This solution, on being shaken up with alcohol remained nearly clear and limpid in the case of honey, but, in the case of the imitation it at once became opaque like dirty milk, due to the deposition of dextrine from the starch-sugar. Mr. Field stated that the samples were made from corn-syrup or starch-sugar, a cheap, crude material obtained from Potatoes and sulphuric acid, or from maize, or even rags and dextrine, and was the principal constituent of the samples of manufactured honey he had examined. The chairman stated he had examined several samples with the polariscope, by which means the fraud was easily detected. *Farming World.*

A NEW ALPINE GARDEN.—We learn from Turin that on August 1 next the alpine garden, named La Chansonisa, will be duly inaugurated on the Little St. Bernard. The name of the garden is taken from that of the rector of the Ho-pice, the Abbé CHANOUX. The secretary of the committee is Signor LUIGI GIORDIO BONELLI, and the work is carried out under the auspices of the Alpine Club of Turin. The main object of the garden is to secure protection for the rarer alpine plants, and to prevent their extermination.

EDITORIAL NOTICES.

ADVERTISEMENT should be sent to the PUBLISHER.

Local News.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

Letters for Publication, as well as specimens and plants for naming, should be addressed to the EDITOR, 41, Wellington Street, Covent Garden, London. Communications should be written on ONE SIDE ONLY OF THE PAPER, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith. The Editor does not undertake to pay for any contributions, or to return unused communications or illustrations, unless by special arrangement.

APPOINTMENTS FOR THE ENSUING WEEK.

SATURDAY,	JUNE 26	(Windsor Horticultural and Rose, London Horticultural and Rose, Royal Horticultural Society, at Drill Hall, Royal Oxfordshire Horticultural Society, Commemoration Show, Hereford and West of England Rose Society, Rose Shows at Canterbury and Sudon.
TUESDAY,	JUNE 29	(Horticultural Shows at Croydon, Reading, and Ealing.
WEDNESDAY,	JUNE 30	(National Rose Show, at the Crystal Palace.
FRIDAY,	JULY 2	SALE. (Imported and Established Or- chids; also, Palm seeds, at Protheroe & Morris's Rooms.
FRIDAY,	JULY 2	

AVERAGE TEMPERATURE for the ensuing week, deduced from Observations of Forty-three years, at Chiswick.—62.6°.

ACTUAL TEMPERATURES:—

LONDON.—JUNE 23: Max., 53°; Min., 62°.

PROVINCES.—JUNE 23 (6 P.M.): Max., 81°; at York: Min., 50°; Sumburgh Head.

Floral Decorations.—The joyous occasion we are in London passing through has been pronounced on Jubilee Day. In the absence of a deductive of an excessive outbreak of the decorative malady, but thanks to the relatively restricted route taken by the procession, we have not to record its spread into the other parts of the town. That the employment of real flowers and foliage in street decoration would have benefited our friends, the florists and the growers, is beyond doubt; on the other hand, an equally estimable class, the artificial flower makers, would have been the losers—and seeing that Jubilees, and other occasions for public high jinks, come but rarely, we cannot but rejoice that the latter have had the supplying of some miles of wreaths, festoons, and the manifold devices to be seen on private and public buildings. As compared with occasions so recent as the Thanksgiving Service in 1872, and the Fifty Years' Jubilee of 1887, the decorations of Tuesday show several novelties. It will suffice to mention the use made of celluloid globes, in which to place electric glow-lamps; the very general use of electric-lights enclosed in glass globes, to define the outlines of buildings, of which admirable examples were to be noted at the Bank of England, the great hotels in Northumberland Avenue, some buildings in the neighbourhood of the Mansion House, and in the electric lighting of the Strand, which last was of an exceedingly effective character. A necessarily hurried visit to the decorated streets by daylight reveals some features the nature of which, under artificial light, was not clearly made out. We refer in this connection to decorative effects that were the most striking perhaps of all, and which were mainly obtained by the employment of plants, natural foliage and cut flowers. We think, and those of our readers who may have remarked it will

agree with us, that the sumptuous *Daily Telegraph* offices in Fleet Street were very beautifully festooned, draped, and enlivened with flowers and foliage. The festoons and drapery consisted of Thuja foliage, and the flowers mostly those of Cattleyas, which are notorious for maintaining their freshness for days after removal from the plants. The flat surface of the building was relieved by bunches of the foliage of Palms and Cycads, and bas-reliefs of crowns, outlined with small white flowers, of mottoes, and words of welcome.

The *Daily News* offices, opposite, had its windows turned into veritable bowers of rusticity by employing evergreens to line and arch them over, and out of which the glow of coloured lamps partially lit up the gloom. The next house to this one in Bouverie Street had a simple yet effectful decoration of bunches of bleached Palm foliage, and Pampas-grass plumes, not used extravagantly, but, all the same, showing up well against the glistening new coat of stone-coloured paint.

The office of the *Illustrated London News* was covered, as regarded its bare wall spaces, with a neatly-arranged draping of common Box, and the *façade* was furnished with boxes containing alternately plants of Rhodanthe Manglesi and white Marguerites, a large coloured view of Windsor Castle, as seen from the town, topping the building. We heard that this view was supplied with running water to represent the river Thames, but we cannot vouch for the correctness of this statement.

The Griffin at the Law Courts was surrounded, as regarded the base of its pedestal, with Ferns, evergreen shrubs, and flowering plants in variety, which served to hide and preserve from injury what is beautiful, that is, the carvings on the pediment, and some festoons at each of the four corners completed the scheme of decoration.

The upper portion of the house adjoining Somerset House, that of Messrs. THRESHER & GLENNY, was very prettily decorated with some neat kind of greenery attached to light wooden trellis-work, fastened to the walls, amongst which Roses and other flowers were arranged together with glow-lights, and on the *façade* were boxes filled with flowers in variety. The effect was good so long as the flowers preserved their freshness, but the tropical heat of Wednesday destroyed them.

What our fellow citizens in the Borough or at the West End accomplished by the use of Flora's productions we are unable to say, excepting that St. James' Street was beautifully decorated with Venetian masts, floral festoons, and garlands, &c.; but we think that the City remains an unchanged first in the matter of decorations, as it undoubtedly is in all that relates to public entertainments and festivities.

A Royal Orchid Bouquet.

We had on Monday last the rare pleasure of witnessing the making of the bouquet ordered by Her Majesty the QUEEN, for the decoration of the dining-room at Buckingham Palace on Jubilee Day. The delicate and tasteful work of putting it together took place at Messrs. WILLS & SEGAR's conservatory at South Kensington, the flowers being furnished by that celebrated firm of Orchid importers and cultivators, Messrs. F. SANDER & Co., of St. Albans. The frame-work of the bouquet consisted of a basket made of wicker-work, heavily gilt, standing on a polished mahogany base; in shape trifoliate, beautifully fluted and worked. From the three courers spring the handle, its three branches forming a dome, surmounting

the top of which is a Royal crown, the letters "V. R. I.," 12 inches in length, being arranged beneath the crown, which consists of several hundreds of flowers of *Odontoglossum citrosimum*, the letters being composed entirely of the orange-coloured *Epidendrum vitellinum*, Millais's favourite Orchid. It is impossible to attempt the description in detail of the many thousands of Orchids used in this the most superb bouquet ever seen, endless spikes of all that is best and rarest from H.R. MAJESTY's dominions being used, together with almost priceless blossoms of the hybridist's art raised in this country since our QUEEN's accession, many of them unique and of great value, among the choicest varieties being Cattleya Empress of India, C. Our Queen, and C. Victoria Regina, which received awards at the meeting of the Royal Horticultural Society on the 15th inst. The Princess of Wales *Odontoglossum* were prominent in magnificent pure white spikes, as also were Lord Dalhousie's *Dendrobium*, with its nankeen-yellow and maroon blossoms. The sprays of the *Disa* from Table Mountain; *Stenoglottis fimbriata longiflora*, also from South Africa; the *Moth-flowered Dendrobium*, from Australasia and British New Guinea; *Vandas*, from the British East Indies; Cattleyas and richly-coloured *Oncidium*s, from British Guiana; and the lovely scarlet *Epidendrum vitellinum* and *Lælia xanthina*.

Among the more rare species and varieties employed, mention may be made of the white *Sobralia leucantha*, the beautiful hybrid *Phaius Owenianus*, *Vanda* trees Hookeri, the white-pouced variety of *Cypripedium Godsefroye leucochilum* var. *Godsefiana*, an importation possessed only by Mr. R. H. Measures, of Orchid fame; the Luxemburg variety of *C. caudatum*, *Dendrobium Phalenopsis*, the spikes of which are admirably adapted for bouquet-making; *Oncidium Batemanianum*, with its beautiful yellow expansive lip and brown crest; *Calanthe Laucheana*, a cross between *C. Sanderiana*, and *C. veratrifolia*, the flowers coloured lilac and white; Cattleya Harrisoni, *Masdevallia*, chiefly varieties of *Harryana*, and a few *M. Chimera*.

The handles of this magnificent basket of Orchids were fitted with flutes or sockets, and the flowers were placed in them, with the spikes entire, and, in very many instances, the whole bulb and leaf also. The interior of the basket, which had to be specially designed and constructed for the occasion, is one central dome, forming a solid foundation, supporting the whole mass of blossoms, which, perfectly finished and arranged, had a height of 8 feet, with a diameter of 6 feet. The number of flowers in the bouquet in 1887 was 50,000, but this high trophy contains a larger number, while the quality is better, and rarity greater; and by command it was delivered at Buckingham Palace on Monday afternoon. The bouquet, on the termination of the Court Dinner, was carried into the Queen's Boudoir, which it served to adorn for several days.

GHEENT HORTICULTURAL SOCIETY.—The last meeting of this Society, which took place on Sunday, June 13, in the Casino. Certificates of Merit were given to the following plants:—*Anthurium Rothschildianum* var. and *A. Andreanum* var., shown by M. Louis de Smet; *Stenorchynchus speciosus* var. *maculatus*, shown by M. A. Rigout; *Odontoglossum crispum splendens*, shown by M. L. De Smet-Duivier; *O. mille odoratum*, *Lælia grandis tenebrosa* var., and Cattleya *Mossie alba*, shown by M. J. Hye; Cattleya *Mossie* var., shown by M. le Comte J. de Hemptinne.

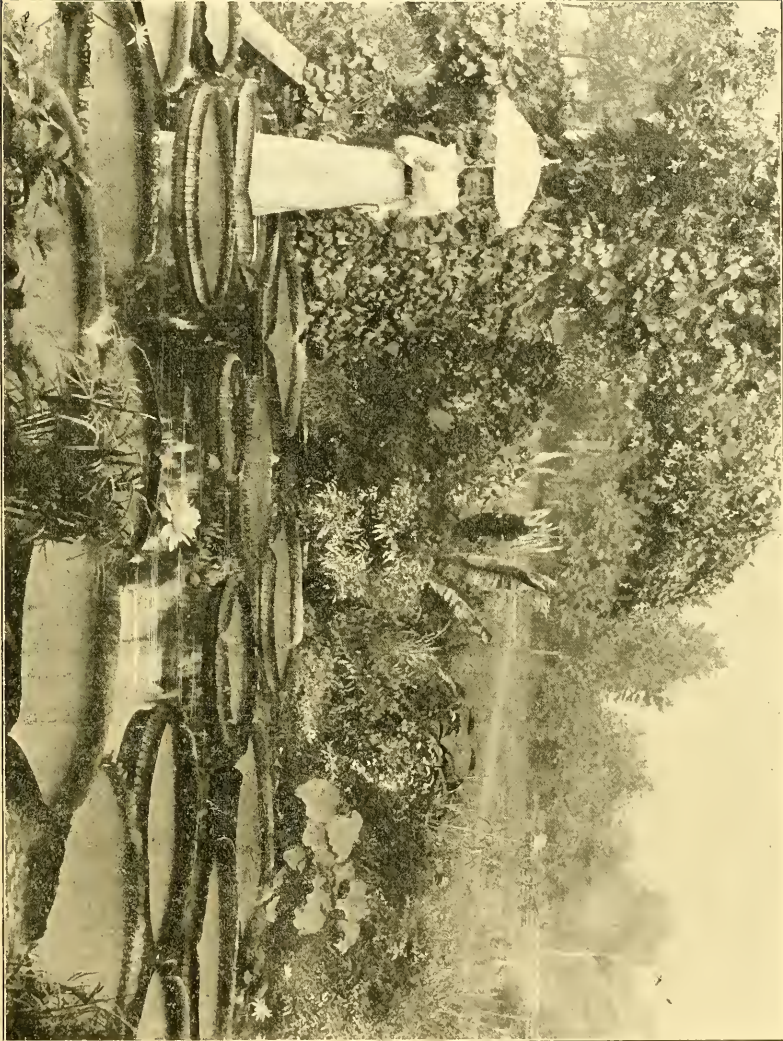


FIG. 162.—VICTORIA REGIA, A COMMEMORATIVE PLANT, GROWING IN AN OPEN-AIR POND ARTIFICIALLY HEATED, IN THE GARDENS OF MR. C. S. NASH, CLIFTON, NEW JERSEY.

ROYAL HORTICULTURAL SOCIETY.—The next fruit and floral meeting of the Royal Horticultural Society will be held on Tuesday, June 29, in the Drill Hall, James Street, Westminster, from 1 to 5 P.M. On this occasion special prizes will be offered for Roses; and at 3 o'clock a lecture will be given by Mr. JOSEPH CHEAL, F.R.H.S., on "Storing and Preserving Fruit."

JUBILEE HONOURS.—Among the Jubilee honours we note, with great pleasure, that Sir JOSEPH HOOKER, who, during his tenure of office as Director of the Royal Gardens, Kew, did so much to develop the resources of the Colonies and of India, has been promoted to the dignity of Grand Commander of the Star of India, G.C.S.I. Amongst other eminent men of science who have been honoured on this occasion are Drs. FRANKLAND, HUGGINS, and LOCKYER, who are severally raised to the dignity of K.C.E.B., while Mr. CROOKES becomes Sir WILLIAM CROOKES.

THE DISASTER AT YORK.—It is no time to dwell upon disaster in the midst of Jubilee celebrations of unrivalled magnitude and success, but we cannot avoid expressing our sympathy with the executive and the exhibitors at the recent York Gala. In our uncertain climate we are never free from such risks, but it is to be hoped that good may come out of evil, and that the catastrophe at York will result in the discovery of means for the prevention of a similar wreck under like circumstances.

THE LAST NUMBER OF THE "ORCHID ALBUM."—Orchid-growers will regret to hear that with the last part of the eleventh volume the *Orchid Album* is brought to a close. The discontinuance of so instructive and trustworthy a publication will be felt as a severe loss by many of its readers and admirers, especially as among a host of horticultural journals there is none which can exactly fill its place. The *Orchid Album* was commenced by Mr. D. S. WILLIAMS and Mr. ROBERT WARNER, in 1832, and they have had various collaborators and helpers in their work, some of whom (Messrs. THOMAS MOORE, B. S. WILLIAMS, ROBERT WARNER, and W. H. GOWER) have not lived to see the termination.

KEWITES CRICKET.—A match, played on Saturday last on Kew Green, 'twixt present and past Kewites, resulted in a win for the present men, who scored 123 runs, against their predecessors' 52 runs. The "past" were represented by ten men only.

"CLAY'S SUCCESSFUL GARDENING."—This is a little work the main object of which is to make known the virtues of Clay's manures, which really needed no such publication. We should have imagined that a publication of this character would have injured rather than have promoted the sale of the compounds, as it does not confer lustre on the contributors.

BEDDING PINKS.—Mr. GEORGE SMITH of Penrose Street, Walworth, sent us, some days since, a collection of single Pinks of a highly decorative character, and well suited for cutting. If disbudded the flowers would be very large, but the profusion of bloom is preferable. Mr. SMITH also enclosed a mule Pink raised from *Dianthus* multiformis crossed with a Pink. The flowers are those of the *Dianthus*, the habit that of the Pink. For flowering in beds or borders these Pinks of Mr. SMITH's are very desirable.

"INDIAN GARDENING."—A weekly gardening paper, on the model of the *Gardeners' Chronicle*, is about to be issued in Calcutta, under the title above given. Gardening notes from the several Provinces and Provinces, including the Hill Stations, will be published, so that gardeners in every corner of India will find in *Indian Gardening* something to interest them.

HAWAIIAN ISLANDS.—In the *Minnesota Botanical Studies*, in addition to many articles of interest is one which has special significance at this time. It is Mr. HELLER's observations on the Ferns and Flower-

ing plants of the islands. The isolated position of the islands renders their flora particularly interesting. There are about 1,000 Ferns and flowering plants known, of which no fewer than 653 are endemic Ferns are very abundant, grasses, composites and Leguminosae, comparatively rare.

HAMBURGH EXHIBITION.—The second special Exhibition will be held from July 2 to 6 inclusive. The chief classes are (Gloxinias, Achimenes, Streptocarpus, cut flowers (especially Roses), bouquets, fruits, and vegetables.

"BOTANICAL MAGAZINE."—The June number contains coloured illustrations and descriptions of the following plants:—

Benanthera Storiei.—A native of the Philippines, described in our columns by Reichenbach in 1850, vol. xiv, p. 296. The flowers are much larger than those of *R. coccinea*, of far more vivid colouring, the segments broader, and the lateral sepals more undulate; t. 7537.

Strobilanthes callosus. Nees.—An Acanthaceous shrub, native of Western India. The stems are cut and used with mud in making the native hats. The oblong, lanceolate, pilose leaves have medicinal properties. The buds are very fragrant. The flowers are in clusters, with broad boat-shaped, leafy bracts, linear sepals, two-lipped corolla, with a short, thick tube, and a flatish 5-lobed violet-coloured limb. An attractive stove shrub; t. 7538.

Vernonia diosmifolia var. *trispala.*—A dwari New Zealand shrub, with small linear, oblong-acute leaves, and small clusters of pale lilac flowers; t. 7539.

Begonia Baumanni.—One of the tuberous *Begonia*s, native of Bolivia, with transversely oblong male flowers, and circular female flowers, with short, plicated stigmas, involute at the margins. The colour is a rosy-pink. Kew; t. 7540.

Laelia tonopsis. Rehb. f.—A small-flowered Brazilian species, with narrow-spreading lilac segments, and a yellow lip, the anterior lobe of which is undulate; t. 7541.

JUBILEE ENTERTAINMENT AT CARLISLE.—Messrs. LITTLE & BALLANTYNE entertained on Monday night last their *employés* to the number of about 200 at the nurseries at Knowfield.

MR. LADD'S NURSERIES.—"I did not walk through every house, but simply looked in at the doors; to walk the length of every house would mean a tramp of six miles, or thereabouts. There are two large blocks of houses (mostly connected by gutters), 101 in all, ranging in length from 300 to 700 feet each. One house of Grapes, 30 by 700 feet, makes one feel that America has not all the big things in the world. Several of the largest houses are vinerias, but they have not as many now as formerly, and most of the places is devoted to small Palms, Ferns, Dracaenas, Ficus, Geraniums, Pelargoniums, Fuchsias, Genistas, Cinerarias, and similar spring plants for the Covent Garden Market; and when the houses are emptied of these, Tomatoes take their place. The plants are all carried to London, a distance of 15 miles, in five large vans, leaving at night, and arriving in London in the early morning; it seems almost impossible that these immense blocks of plants could be conveyed in this manner, or find a sale upon arrival. I was told that with such plants as Fuchsias, Pelargoniums, and Cinerarias, when they are in bloom and saleable, they are rushed into the market regardless of the price until 10d. per dozen is reached, then they stop—not a very fancy price for blooming plants in 5-inch and 6-inch pots. This place is deserving of notice simply on account of its size; it is only one of four large places owned and operated by Mr. LADD, which undoubtedly makes him the largest individual owner of greenhouse structures in the world. The four places combined will probably cover from one and a half to two million square feet of surface—a larger area than would be covered by any ten concerns combined in America. A large place is not necessarily a successful one, however, or one to be held up as a model. I was told that after the houses were once built they are

never repaired, very little repairs are ever made, and as soon as a house gets in very bad shape it is considered cheaper to pull it down and put up a new one than to repair the old. It may be worth a trifle to be known as the largest florist in the world, and to have built up such a vast concern in a single lifetime; but the sensible man will put up no more glass than he is prepared to properly care for. *Robt. Simpson, in the "American Florist."*

"BOLETIM DA SOCIEDADE BROTERIANA."—The thirteenth volume, that for 1896, has lately reached us. It contains important communications on the botany of Portugal, from the pen of Prof. HENRIQUES and other botanists.

THE FLOWER TRADE.—The cut-flower trade has been very brisk this week, the chief demand being for Roses, and for flowers red, white and blue. The decorators have also been very busy.

PINK CUPID.—The first Cupid was short of stature, and white, but it will not be a matter of surprise that some of his successors should be pink. Such is the case with a Sweet Pea before us, of which seeds were obligingly sent to us some time since by Messrs. BURKER & Co., of Philadelphia. The plant (ought we not to say *hanna*?) is rather taller than in the original Cupid, and the whole surface is, we take it, somewhat more hairy; the hairs being rigid, with a bulbous base, intended, we presume, to keep off marauders. The leaflets are oblong-retuse, rounded at the base, and the petiole deeply winged. The stipules are linear-lanceolate, somewhat falcate, nearly as long as the petiole. We give these details because they suffice to show the distinct habit of the plant; the width of the standard is about 1½ inch (or 3 cent.), its length being about the same. Its form is roundish, notched at the apex, and its colour a delicate rose-pink. The wings are broad, and of a still paler hue; the keel is quite white. It is an interesting addition to our collections of Sweet Peas.

"THE BOTANICAL MAGAZINE FOR 1837."—The volume for the year 1837 was edited by Sir WILLIAM HOOKER, who had not yet taken over the charge of the Royal Gardens at Kew, but was at that time Professor of Botany and Director of the Botanic Gardens, Glasgow. It was dedicated to "JAMES BATEMAN, Esq., of Knypersley Hall, Cheshire, author of the magnificent *Orchidaceae of Mexico and Guatemala*, a work of which it is hard to say whether the beauty of the subjects represented, the execution of the figures, or the taste and judgment displayed in the topographical department, is most to be admired; the present volume is dedicated with sentiments of high regard and esteem by his obedient friend and servant, W. J. HOOKER."

KEW GUILD.—The fifth number of the *Journal of the Kew Guild* has been issued, and amply maintains the interesting character of its predecessors. It opens with a portrait and a brief notice of Mr. J. G. BAKER, who has contributed so largely to horticultural botany. Details are given concerning the annual meeting, and various items of interest to old Kew students are added. Miss A. M. GULVIN has been appointed head gardener to J. BROODEN, Esq., of Iscoed, S. Wales. Miss GULVIN writes that "My men are all that I could wish, no cause for anxiety at that quarter." The notes from "Old Kewites" in various colonies and in foreign countries are particularly interesting. It is to be hoped that this feature will, if possible, be extended. As complete a list of old Kewites and of their present places of residence as possible, is added. Long may the guild flourish!

"THE ENGLISH ILLUSTRATED MAGAZINE."—The July number of this publication is entirely devoted to a retrospect of the events of the last sixty years. It includes articles upon the QUEEN and Royal Family, and others on such subjects as—"State Pageants of the Victorian Era," "The Queen's Army," "The Historian of the Queen's Reign," "The Queen's Head" (?), "Raiment of Victorian Women,"

"Drama of the Victorian Era," "Literature of the Victorian Era," &c. It is, as usually, well got up, and handsomely illustrated.

GRAFTING OF HELIANTHUS ANNUUS AND LÆTI-FLOLUS.—The *Revue Scientifique* recently contained a note upon an experiment made by M. L. DANIEL, who, in the spring of last year grafted the large annual Sunflower (*Helianthus annuus*) on *Helianthus laetiflorus*, and *vice versa*. The former has a stem with a whitish skin, covered with hairs, which are persistent for some time; the leaves are distinctly cordiform. It is annual, and consequently forms no reserve or store-matter in its stem or in its root. It is caudiciform. The other plant has a green stem, with feeble hairs, with numerous lenticles in the adult stage; the leaves are lanceolate; it develops perennial root-stocks, swollen at the tips, and containing a reserve of inuline. It is multiflorous. They are therefore two species of the same genus, which differ markedly in outward form and in character. The results which the experimenter obtained from grafts between these plants led to the following conclusions:—1st. The direct influence of the stock and of the graft is reciprocal in *Helianthus*. The action of the stock is predominant on the form of the foliage of the graft, and is also evident in the blooming; the action of the scion is exercised especially on the mode and duration of the growth of the stock. 2nd. There must therefore be a substitution between the formation of tubers and that of wood when the species of *Helianthus* pass into the resting stage.

MUNICIPAL GARDENS, CAPE TOWN.—As an object-lesson, the plantation of succulent *Euphorbias*, *Opuntias*, &c., in the Municipal Gardens, Cape Town, is very striking (fig. 163). The trees in the background are necessary probably for shelter, but their forms are in rather violent contrast with the quaint forms of the succulents; but gardeners, to no small degree, manage to set the "environment" at defiance, and here we have plants, which usually grow under very different conditions, associated together.

ROYAL SCOTTISH ARBORICULTURAL SOCIETY.

—A General Meeting of the Royal Scottish Arboricultural Society will be held at No. 5, St. Andrew Square, Edinburgh, on Monday, August 16, 1897, at 2 P.M. R. C. MUNRO FERGUSON, Esq., M.P., President, in the Chair. The members of the Council and the judges will meet at 1 P.M. The business, which will occupy the attention of the meeting, includes the election of new members, election of two trustees in room of Dr. CREGHEON and Mr. ROBERT HITCHCOCK deceased—Lord BALVAIRN and Mr. MUNRO FERGUSON, M.P., are recommended by the Council for these vacancies; election of additional local secretaries; an address by the president, or an eminent specialist; "the best methods of converting timber," by "Economist;" "the best methods of converting timber," by "Sawdust;" "the sforestation of waste land," by "Arborous;" "forestry and game preserving, and how they may be worked together," by "Enthusiasm;" "the forest institute of Vallombrosa," by "Thick as Autumn Leaves," &c.; "the planting and management of hedges," by "White Thorn;" excursion in 1898; library and museum; and papers by Mr. C. C. HENKEL, Conservator of Forests, Umata, Cape Colony, on "The Forests of South Africa and their Future;" and by Mr. MALCOLM DUNN, Dalkeith, on "Forestry in Scotland during the Sixty Years of the Queen's Reign." The Council recommend that members of the society should use their influence with town and County Councils, and other local authorities, as well as landed proprietors generally, to induce them to plant specimens of ornamental trees, avenues, groups, and woods of all sizes, during the ensuing season, to commemorate in an appropriate manner the Queen's Diamond Jubilee Year. The twentieth annual excursion of the Society will be held on August 17, 18, 19, and 20, 1897, in the counties of Dublin, Wicklow, and Kildare, Ireland, and immediately thereafter a supplementary excursion will be made to the Lakes of Killarney with the option of returning by

Glenariff, Cork, and Mallow to Dublin. Permission to visit their estates, parks, &c., has been graciously granted by the following:—The Commissioners of Public Works in Ireland; the Director of the Department of Science and Art, Dublin; Lord Ardilaun, Viscount Powerscourt, Viscount Monck, the Earl of Meath, Earl Fitzwilliam, the Duke of Leinster, Charles R. Hamilton, Esq., of Hamwood, the Earl of Kenmare, and H. A. K. Herbert, Esq., of Muckross. Members intending taking part in the excursion must intimate their intention to the secretary not later than Saturday, July 17. Members may join the party at Greenock or Dublin, provided they mention this when sending their intimation; and they must intimate whether or not they intend to take part in the trips to Killarney and the extension via Glenariff to Cork. Each member must send to the secretary, along with his intimation a deposit of 10s. to defray the preliminary and other necessary expenses. Other particulars as to this trip can be obtained on application to the secretary, R. GALLOWAY, Esq., 5, St. Andrew Square, Edinburgh.

POLLINATION OF ORCHIDS.—The *Orchid Review* gives an account of some interesting observations which have been recently made at Kew by Mr. GEISSERT. He caught a bumblebee with three different kinds of pollinia attached to it. Between the eyes were two pairs from one *Odontoglossum*, on the middle of the thorax four pollinia of a *Cattleya*, and on the back of the thorax between the wings, those of some *Vanda*, which proves that the bee fed among various species. Another interesting example was that of a common bluebottle-fly with the pollinia of a *Cirrhopetalum* affixed to the middle of its thorax. The flower had evidently attracted the insect by its fetid odour.

JUBILEE PUBLIC GARDENS.—West country readers of the *Gardeners' Chronicle* will be interested to learn that Mr. F. W. MEYER, landscape gardener, in the employ of Messrs. ROBERT VEITCH & SON, nurserymen, of Exeter, has been successful in gaining for the firm two competitive plans for laying out public gardens in commemoration of the Jubilee, namely, for Gardens at Yeovil and Crediton. For the Yeovil Garden nine plans were sent in.

BOTANICAL EXCHANGE CLUB.—The report for 1895 has only recently reached us. It is edited by Mr. BEET, and consists in a series of comments upon plants of doubtful position, or which are otherwise interesting.

"FAVOURITE FLOWERS."—The last part of this useful popular production is devoted to Orchids. Novices desirous of increasing their knowledge of these plants will find much help from these parts.

"FLORA CAPENSIS."—We note with great satisfaction the publication (by Messrs. L. REEVE & Co.) of the third and concluding part of the 6th volume. The work was commenced by HARVEY and SONDER, remained in abeyance for several years, but has at length been taken up again under the editorship of the Director of the Royal Gardens, Kew. Its limitations have been so extended as to include not only the Cape Colony proper, but the whole of South Africa up to the Tropic of Capricorn. The present part is devoted to the continuation of the Liliaceae, and is entirely the work of Mr. J. G. BAKER. It is hardly possible to overstate the value of his recension. Many of the species have hitherto been collected only once, and are not represented in gardens or herbaria. Those that are in botanic gardens are often badly named, so that this authoritative descriptive enumeration will be of exceeding use. Mr. BAKER has largely availed himself of the unrivalled collection of living plants at Kew. A large number of "Cape Bulls" are of course included in this part, valuable for their beauty, their interest, and their adaptation to the peculiar climatal conditions under which they grow. With the vast expansion of British territory, the collecting area has increased proportionately, and, no doubt, many of the species at present little known will speedily become familiarised

to botanists, while it is certain that many novelties yet remain to be discovered. The Editor in the preface sketches the history of the work, and the more or less inevitable delays that have occurred in its publication, and reads a well-earned meed of praise to Professor MacOwan, Mr. Harry Bolus, Sir Henry Barkly, Mr. J. Mealey Wood, and various other collectors.

PLANT PORTRAITS.

CATAPETUM SPLENDENS VAR. *RUBIGINOSA*.—Segments deep brownish red, with purple spots; lip yellow. *Lindenia*, t. DLV.

CATAPETUM LABIATA PURPUREA.—A variety in which the segments and the lip are unusually splendored in their deep coloration. *Lindenia*, t. DLX.

CATAPETUM MARTINI (SCHIMMER) DONDIANA.

CATAPETUM MAXIMA VAR. *VIRGINIANA*, *Lindenia*, t. DLXIII.

CATAPETUM MOSSIE MONDI, LA GUATA, Williams' *Orchid Album*, t. 528.

CATAPETUM SCHILLESIANA, H. G. Rohb. f., Brasil, Williams' *Orchid Album*, t. 528.

CATAPETUM "THE CEAR."—Supposed to be a natural hybrid between *C. labiata* and *C. granulosa* (see *Gard. Chron.*, Nov. 14, 1896), *Lindenia*, t. DLVI.

CATAPETUM TRIANGULARE VAR. *EXORNATA*.—Lip with a rich yellow blotch in the centre, and a purple stain in front. *Lindenia*, t. DLVI.

CHRYSOPHYLLA VILLOSA, *Mechan's Monthly*, June.

CYMBIDIUM LOWIANUM VARIE, Burtall, Williams' *Orchid Album*, t. 527.

CYPRIPEDIUM VICTORIE MARLE, *Gard. Chron.*, 1893, 1, p. 613; *Lindenia*, t. DLIX.

ERANTHEMUM SERVOISUM, *Garden*, May 15.

LELLA LINDLEYANA, Robb. f., S. Brasil, Williams' *Orchid Album*, t. 528.

LEPTOSPERMUM SCOPARIUM GRANDIFLOREM, *Garden*, May 20.

MADRYVALIA HENRIETTEAE, Kriehlin (figura × Shuttleworth), *Gard. Chron.*, XIII, 1895, p. 740; *Lindenia*, t. DLVII.

ONCIDIUM PHALANOPSIS VAR. *EXCELLENSE*, *Lindenia*, t. DLIII.

ONCIDIUM SPLENDIDUM, *Garden*, June 5.

PLEM. DRAP D'OR D'ESPEREN, *Bulletin d'Arboriculture*, &c., May.

TRICHOPILOIA BREVIS, *Garden*, May 22.

PLANTS OF THE VICTORIAN ERA. FLOWERS.

SINCE the Hon. and Rev. William Herbert, in 1831, published his preliminary treatise on the *Amaryllids*, in which he named "the shelly and foliaceous seeded occidental *Amaryllids*, *Hippeastrum* or *Knights' Star Lily*," wonderful progress has been made in the direction of improvement. In 1837 the leading species were *A. sulcata* and *A. vittata*, and from these a very few garden varieties had been obtained. In the quarter of a century which followed, not a few seedlings were raised; the finest were found at the great International Exhibition held at South Kensington in 1866, when but few species were shown, but many more of home production. From that time onward the advance has been most marked, Messrs. Veitch & Sons greatly distinguishing themselves as raisers; and the names of Williams, Paul, Douglas, Perkins, Ker, Kelway, and others, are associated with the improvement of the *Hippeastrum* in more recent times. Awards to new varieties are now seldom made, owing to the high level of quality found in the latter-day seedlings.

AURICULA.

Not less striking has been the onward march towards perfection of the *Auricula*. At the time of the accession of the Queen, the leading green edges were Colonel Taylor, Booth's Freedom, Prince of Wales, and Lovely Ann; and of these, the two former are still to be found in collections. Grey edges: Conqueror of Europe, Ne plus Ultra, Complete, and Privateer. White edges: Taylor's Glory, Regulator, Regular, and Catharina. Selfs: Lord Lee, Metropolitan, Othello, and True Blue. Alpine varieties were few, and chief among them *Conepicus*, a flower still to be found in collections in the north, where the work of improvement has not kept pace with that in the south. Lancashire

Hero, still one of the finest grey edges, appeared in 1846; and Heap's Smiling Beauty, white edges, still cultivated, a little later. Dickson, of Brixton, was successful as a raiser; later notable producers were Lightbody, Headly, Simonite, Woodhead, Mellor, Douglas, Horner, Barlow, &c. The alpine section has been marvellously improved during the past forty years, especially in the hands of Mr. Charles Turner and his successors, and Messrs. Douglas,

was the beginning of the production of the fine varieties occasionally met with in the present day. Both as a decorative and exhibition plant the Achimenes has lost ground, a retrogression, perhaps, caused to some extent by the greater favour shown to the Gloxinia and Streptocarpus. Large pans and pots of the leading varieties were at one time a feature at our leading exhibitions, and they still put in appearance at some provincial flower-shows.

attractive. The white form of *A. chrysantha* is much esteemed, and one of the latest introductions—Stuarti—is a charming dwarf blue early-flowering type. *A. glandulosa* and its varieties do best in the cool, moist districts of the north.

AZALEAS.

The Chinese Azalea, like the Camellia, has decidedly declined in popular estimation, the latter in a more marked manner than the



FIG. 163.—MUNICIPAL GARDENS, CAPE TOWN. (SEE P. 422.)

Phillips, Walker, and others have raised fine varieties also, some of which will be grown and exhibited for years to come. The centre of cultivation of the Auricula for exhibition is now more in the south than in the north as formerly.

ACHIMENES.

The Achimenes has in late years ceased to be grown as much as formerly. In 1837, the scarlet *A. coccinea* appears to have been the only species in cultivation; but during the forties there were several introductions, notably *A. patens*, *A. longiflora*, in 1841; and in all probability the crossing of this and *A. coccinea*

Some two dozen or so varieties, to which additions are occasionally made, afford ample choice for those who are induced to cultivate this generaceous plant.

AQUILEGIA.

The Aquilegia is deservedly popular, and is increasing in popularity. Sixty years ago *A. alpina*, *formosa* (californica), and *glandulosa* were almost the only imported species cultivated; the double and single forms of *A. vulgaris* were largely grown until *coerulea* appeared in 1864, and *chrysantha* in 1873. This led to crosses being effected, and now the hybrids of *coerulea* and *formosa* are highly varied and

former. *A. indica* and *A. sinensis*, *A. nudiflora* and *A. pontica*, were in cultivation sixty years ago, and the three latter had undergone considerable improvement; that of the Chinese Azalea came later. The latter is still grown largely for decorative and market purposes, the double-flowering varieties are more popular than the single flowered because more persistent. New varieties appear but infrequently, certain old ones are yet standard favourites. As an exhibition plant, the Azalea has particularly declined, the huge examples of thirty years ago have disappeared. One reason for large specimens being so rarely seen is owing to the

fact that there are now but few exhibitions when the plants are at their best. *A. amœna* and its varieties are valued for their free-blooming quality; the double forms of the hardy American Azaleas are now many and very fine.

BEGONIAS.

Probably no popular flower has come to the fore with greater élan than the Tuberos-rooted Begonia. At the time of the Queen's accession, and during the first twenty-five years of her reign, it was unknown. It was the discovery in Bolivia, by Mr. Pearce, of *Begonia boliviensis* in 1867 which gave the great impulse to the cultivation of the tuberos Begonia. A cross made between *B. Veitchii* and *B. boliviensis* resulted in *B. Sedenii*, which was sent out in 1870; then followed *intermedia*, *Chelsoni*, *Stella*, *Vesurinus*, and succeeding varieties. It was at once seen there was a great future for the flower. It was taken in hand by Messrs. Laing, Cannell, Rev. Lascelles of Bath, and many others, and by MM. Lemoine and Crousse in France, and in the present day it has developed single and double forms of such amazing beauty and perfection, as to more than realise the most sanguine anticipations of its first cultivators. The blossoms of the most advanced of the single varieties are nearly or quite circular; these of the double types are large, full, and symmetrical. The tuberos-rooted Begonias have proved to be the most useful and effective of bedding plants. Other species such as *B. Freebelii* (1872), have been much employed in securing diversity, and most useful crosses have resulted.

The introduction of *B. socotrana* from the island of Socotra, in 1880, afforded another valuable species for cross-fertilisation, and by using it as a seed-parent, crossed with some of the summer-flowering tuberos varieties, a new race of winter-flowering types has been obtained. In fact, the development of the Begonia appears to be almost illimitable, and every year witnesses the addition of something of value. Varieties of the subpetala type, with handsome foliage and attractive flowers, all of continental origin, are highly appreciated for flowering in winter and spring; and of the perpetual-blooming and evergreen kinds, there are now many of great value, including the charming dwarf bedding-types originated by Messrs. Sutton & Sons.

CALCEOLARIAS.

The Calceolarias of sixty years ago were limited in number, small in size, and tall in growth. Four species were introduced from Chili or Peru in 1822, and our forefathers no doubt seeded from them. In 1837 but little improvement had been made, but Plant of Cheadle had, in 1842, advanced with seedlings, and originated some pretty striped varieties in 1848. Major, Constantine, Kinghorn, and others, carried on the work of improvement, and by making use of the sub-shrubby species improved the habit of the plants. Gaines and Dobson, with others, carried on the work still further. Cole, of St. Albans, originated a distinctly shrubby section; and by making use of some of these, James of Isleworth further reduced the habit of growth of the herbaceous type, and imparted compactness and vigour to it. The introduction of a very dwarf-growing type from the Continent became the progenitor of the low compact habit seen in the strains of the present day. The flowers have increased enormously in size, the trusses of bloom are considerably larger; the points of quality which ruled fifty years ago are no longer regarded.

CINERARIA.

Much the same procedure has happened in the case of the Cineraria. In 1837 the varieties in cultivation were much the same as the seedlings from *cruenta* Mr. Lynch and others have been exhibiting during the last two years. It was not until ten years after, when Messrs. E. G. Henderson & Son introduced *Beauty of St. John's Wood* and *Mlle. Cerio*, that the work of improvement set in, in earnest; the Cineraria, as a decorative and exhibition plant, was in its greatest glory from 1854 to 1864. As in the case of the Calceolaria, the introduction of a dwarf continental strain has brought a corresponding change in the habit of growth, while the flowers have attained to enormous proportions. As an early-flowering greenhouse plant, it is of great value; but it is nearly time there was something like a harking-back to old points of quality. There are indications that this work is in course of being carried through again, and it is needed.

CAMELLIA.

In 1857 there were probably sixty or more varieties of *Camellia japonica* in cultivation. It was then and for years afterwards highly popular, as Thackeray has taught us—the button-hole flower *par excellence*. Chandler, Loddiges, and Masters, among others, were originating new varieties when the Queen was a child. Up to within the last twenty years or so, new varieties frequently appeared; but with the introduction of the American *C. M. Hovey*, the high-water level of improvement appears to have been reached. *C. imbricata* has been in cultivation almost from the birth of the Queen, and the old double white nearly as long. But the decline of the Camellia is noticeable, and cut blooms find but little recognition in our markets.

(To be continued.)

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

JUNE 15.—Present: Dr. M. T. Masters, in the chair; Dr. Muller, Dr. W. Wilks, Dr. Bonavis, and Rev. H. Henslow, Hon. Sec.

New Method of Grafting.—Dr. Masters called attention to the fact that the method described at the last meeting had been adopted before by A. Knight; but on turning to that author's paper (*Trans. Hort. Soc.*, vol. 1, p. 239) it is not quite clear whether it is quite the same. According to Knight's figures, the extra "tongue" is not inserted as a duplicate section, but nailed to the outside of the bark; but in the text it would read as if both tongues grew and covered the stock.

Synanthus Tompkinsii.—Specimens were sent from Chiswick, in which the terminal flowers had coalesced, producing a large campanulate structure. This is a familiar monostomy; but it appears that M. Vilmoren has succeeded in fixing it; over 95 per cent. of seedlings, raised from the normal flowers of the spike, are said to come true, and bear their campanulate blossoms.

Fasciated Buttercup.—A rather curious example was sent by Miss Corpen of Highfield, Hartley, Plymouth, found at Denham Bridge, Devon. Two fasciated stems were so slightly coherent as to readily separate while the two symmetrical blossoms, however, remained firmly coherent. *Definite Lily of the Valley*.—Henslow showed a flower in this unusual condition, in that a scape bore a single terminal flower, in which the whorls were in fours, exceeding the pistil.

Romney with fungus.—Rev. W. Dod sent specimens of *R. Coulteri* badly attacked by some fungus. It was forwarded to Kew for investigation.

Grapes, Diseases.—Samples of fruit, together with leaves, were received from Mr. James Cannon, of the Gardens, Antlerarder House, attacked by *Gleosporella*. The leaves appear to be scalded, so that the opinion of the committee was that this mischief should have been carefully avoided. Bordeaux spray at a very early period of the attack might have proved efficacious in checking it.

Campanula Balcaniana.—Dr. Masters exhibited drawings of a remarkable phenomena in this variety. The plant has variegated leaves, and is a hybrid between *C. fragilis* and *C. isophylla*. The sepals are foliaceous, with petals, while

the ovary is entirely superior, and not inferior, as in all the Campanulaceæ. A full description will be given later.

Abnormal Fungi in a Mushroom-bed.—With reference to the specimens shown at the last meeting, Mr. A. Sutton undertook to transmit them to two eminent Mushroom growers, who have kindly sent the following reports:—(1) "Replying to your letter of the 13th with sample of fungus sent, which is unknown. Without seeing the bed or knowing more particulars of the materials used for the same, I could hardly say for certain whether it is caused from the manure not being properly sweetened or from the mould used for casing, most probably from the latter, but have found this to be generally the cause of fungus and mildew, the spores being introduced through the mould; especially if this is used fresh from a pasture field, more often than this contains some kind of fungus. The only plan to avoid this is to use mould, if possible, from an arable field, or, without the turf, which has been stacked a year or more, and when using mix a small quantity of salt or slacked lime."

(2) "Replying to your inquiry of the 13th inst., I beg to inform you that the fungus sent is not frequently met with, but I have seen some before. The reason one so seldom meets with it on Mushroom-beds is because the loam used in casing the beds is usually procured from a good ground, and not in the vicinity of or from under trees. I have no doubt in the least but that the fungus sent you is from the soil used, although soil used from the same heap did not previously develop it, as perhaps the previous lots of soil did not contain any of the spores that the present generated and subsequently. As several beds had been cased from the same heap, I take it for granted that the soil remained undisturbed for a length of time, and possibly under a tree or trees, which would account for its appearance in the last bed. I should say the reason why *M. muscarius* did not appear in due course was, because the manure for the bed was not properly prepared; that it was made up too quickly, and consequently burnt the mycelium in the sets; or that it was not sufficiently fermented, and so rotted the mycelium. If your correspondent makes up another bed, and obtains the same casing from the same heap, I am convinced that the spore is not to blame, no matter where he had it from, as I never yet saw any false fungi where the compost has been properly prepared and good loam used. Could you procure a cake of the spawn for my inspection? If so, I will make an examination of it, and use it with some that I am shortly spawning a bed with. I would then report further on the subject."

Rhododendrum with Fungus.—Mr. W. Wilks brought a specimen of the fungus *Xobosidium rhododendri*. It is described in Dr. W. G. Smith's edition of *Tuhnet's Diseases of Plants*, p. 457.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

JUNE 17.—There were several very choice Orchids on exhibit in the Coal Exchange, selection rather than collection being the general order.

Among other plants, Capt. SCROFIELD (Mr. Schill, gr.) submitted a fine piece of *Cypripedium Chapmanii magnificum* (F. C. C.); this is a hybrid between *bellatulum* and *Curtisii*, extra in form, densely spotted with clear ruby or pale flushed ground with a prominent pouch, taking more after *Curtisii* in form than in colour of the petals, and a move in the right direction in the way of self-secting. The same grower had also *C. Chapmanii* (A. M.) = *Curtisii* × *bellatulum*. This is much inferior to the one above described, and it shows how the reverse cross may effect a change in the progeny. It is similar in ground colour and in spotting, but wants the size and substance of its fellow seedling.

WILLIAM THOMPSON, Esq., Walton Grange (gr. Mr. W. Stevens), had a finely grown plant of *Cattleya Mossie Wagneri* (First-class Certificate), with two flowers. There was no flushing about the flower, the segments and labellum had a beautiful pure white, with two large orange-coloured blotches on the throat and running up to the base of column, and forming lines towards the base. The same grower showed *Odontoglossum Cordinei* (Award of Merit); this is the cleanest and brightest form of *O. Cordinei*, having prominent chestnut spots of large size on a whitish ground colour. The spike was twelve flowered.

F. SANDER & Co., St. Albans, submitted *Cattleya Mossie rubens* (Award of Merit). The flower was not large, but it was very brilliant red with a shade of violet pervading it. The lip was deep shaded violet in tone to the extremity, with vivid orange blotches at the mouth of the orifice. If this came up again a little better developed, it has a chance of getting the higher award. The firm also put forward *C. M. Empress of India* (Award of Merit), a full bold flower with broad segments standing well forward, and had a showy crimson lip, which is broadly edged with pink, the orange ground being prominent, and contrasting well with the showy black. This firm also had *Grammatophyllum Mesastriaum* (Award of Merit). This is a very prominent example of the species, having a flower raceme 5 feet long, carrying about 30 flowers, that reminds one of *Ansellia africana*, but they are larger. The pale brown petals on the greenish-yellow ground of this flower are very attractive, still it is not a chief-looking plant. The other plant from this firm which received honours was *Phaius Owenianus* (Award of Merit); this is a splendid move in the right direction, its bright-coloured flowers being uncommonly attractive. *Phaius Owenianus* (Esq., The Victoria, Haslemere (gr. Mr. T. Lofthouse), had a fine dark form of *Lælia tenebrosa*, called

nigrescens (First-class Certificate); the segments of this variety are concoloured—a bright chocolate hue standing well out, the petals twice the width of the sepals; lip, blue-lilac-rose with maroon lines radiating to the base; the lower half of the limb maroon and purple comb-ed with heavy lines running from orifice and shading out to the extremity. The same grower had also cut flowers of *Laelia purpurata grandis* (Award of Merit); this was a splendid flower with white segments and a lip of unusual brilliancy and fine form. Had it been shown as a plant it would have received the highest award. SAMUEL GRATEX, Esq., West View (gr., Mr. McLeod), had *Laelia-Cattleya Queen-Empress* (First-class Certificate); this plant was still fresh and

NATIONAL ROSE, PORTSMOUTH.

JUNE 18.—This was held in the Victoria Park, Portsmouth, in connection with the Isle of Wight Rose Society. The season being more than usually backward, it was unfortunate that, on account of Jubilee festivities, an earlier date than originally fixed was found necessary. This fact, and the severe frosts of May, together with stormy weather throughout the country, was the cause of a somewhat poor show for the National Rose Society. Still, there were some grand flowers, those from Colechester and Oxford being especially clean and bright. We do not think the best use was made of

Esq., and the Rev. Foster-Melliar's grand Teas, a great blank is sure to be felt.

There were several incidents of the day well worth noting, Mr. F. CANT was disqualified in the premier class for nurserymen for infringement of rule 7, he staging a beautiful back row dower of a sport from *S.-Marie Rodocanachi*, unnamed, and without giving name of raiser. It is a pity we cannot have the very earliest opportunity of seeing such a good new Rose without its being definitely named and shown under such, but as this rule was made at the last meeting, it was thought wiser to enforce it upon the first infringement.

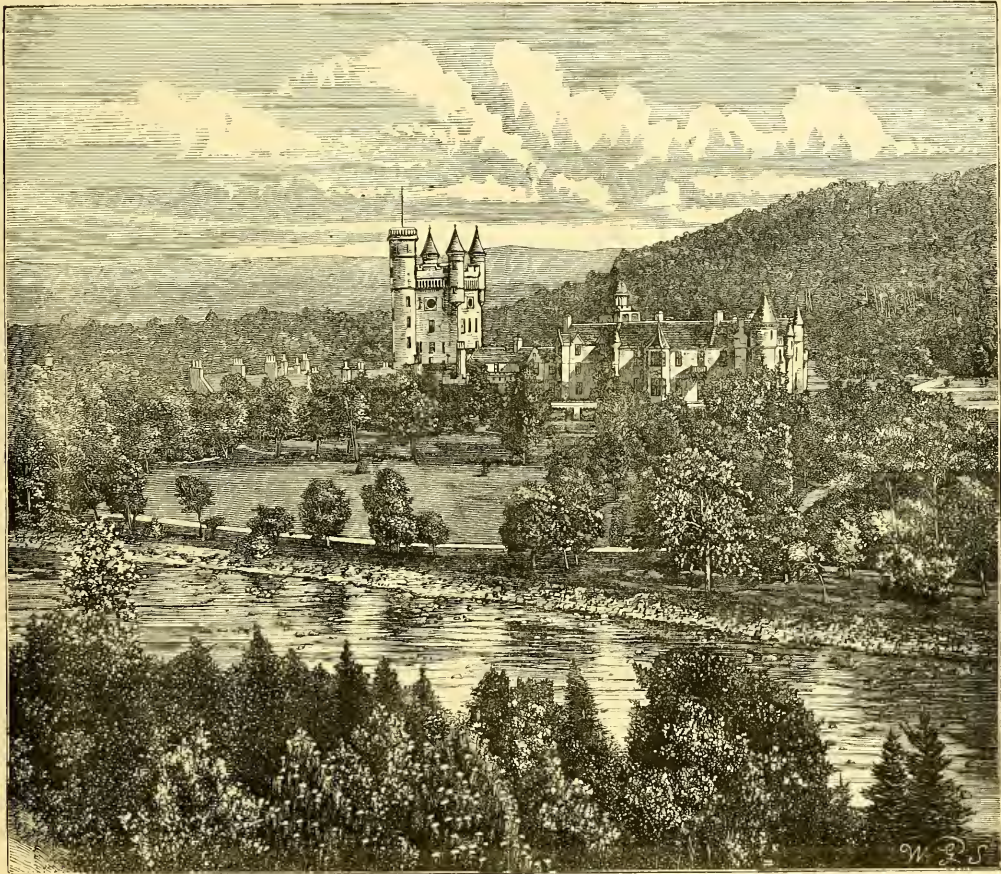


FIG. 164.—BALMORAL CASTLE, THE QUEEN'S HIGHLAND RESIDENCE.

beautiful; it will be found described at length, as exhibited by F. Sander & Co., p. 390, col. 2, to which we have nothing to add.

H. GREENWOOD, Esq., of Highfield (gr., Mr. Spurr), exhibited a well-grown plant of *Cypripedium laevigatum* (Award of Merit), with a dozen or more rather small but bright and pretty flowers. It is a wonder more has not been made of this species for crossing.

ARTHUR BLAIR HARRIS, Esq., showed a form of *Cypripedium* in the way of *Governiana*; and a well-flowered plant of *Cattleya Mossie*, but the flowers were too small for the plant to receive a cultural Award.

Messrs. JOHN COWAN & Co. had a miscellaneous assortment of showy flowered orchids, for which he was awarded a Vote of Thanks.

what flowers were available. For example: it would obviously have been better to allow more space to the beautiful garden Roses, instead of crowding these, and leaving so much blank space between other classes. While aware of the difficulties caused by expected exhibitors failing to appear at the last moment, we think a little more space might have been accorded what was decidedly the feature of this show, viz., garden Roses. Nor was there any clothing to the front of the benches, box-tids and the many structures of lumber being fully exposed.

Messrs. Harkness & Son, from Bedale and Hitchin, also E. R. Hindsell, Esq., from the latter town, were much missed; and when we are also minus Mr. O. G. Orpen, H. Machin,

Another very hard case of disqualification occurred. In a class for twenty-four blooms, and also in that for twelve. Mrs. GEORGE MURRAY, Ryle, staged two blooms of *Charles Lefebvre*, one of which was named *Fisher Holmes*. It was quite certain from the lady's explanation that she had received the plants under the names given. The stands were well ahead, and from this unfortunate error only, both the Challenge Cup and a money prize, and also the Queen's Gold Medal, were forfeited.

Mr. A. TATE, Leatherhead, in a class for twelve Roses, secured the cup presented by Captain RAMSAY, and also the Silver Medal of the National Rose Society, for the best Tea or Noisette, and the best *H. Perpetua* or *H. Tea* in the amateur divisions; it was a grand box for the season.

NURSERYMEN ONLY.

Forty-eight single trusses distinct.—Mr. B. R. CANT, Colchester, was well ahead, his blooms clean, and by no means small.

For twenty-four distinct groups, Messrs. CURTIS, SANFORD & Co., Torquay, were 1st with very clean flowers, their best being Margaret Dickson, Louis van Houtte, Ulrich Brunner, Duke of Connaught, Marie Baumann, Marie Reily, Duke of Edinburgh, and Horace Verret. Messrs. BURRELL & Co., Cambridge, were 2nd; and Mr. G. FAYERS, Oxford, 3rd. The Bride, C. de Nadailac, M. Niel, and Brideismad were very good in the last-named stand.

For twelve trusses of any Rose except Teas or Noisettes, Messrs. PRIOR & SONS, Colchester, were well in front, with some grand examples of Lady Mary Fitzwilliam, among which was the Medal Bloom, and Mr. G. FAYERS, Oxford, 3rd. The Bride, C. de Nadailac, M. Niel, and Brideismad were very good in the last-named stand.

Tea and Noisette Section.—Mr. G. PRINCE, Oxford, won in the class for twenty-four distinct, single trusses, with an excellent lot, consisting of Maréchal Niel, Cloopetra, The Bride, Meles, Madame Cusin, Rubens, C. de Nadailac (Médal), Golden Crest, Brideismad, Souvenir d'Elie Vardon, Thérèse Lévet, Niphotes, Princess of Wales, Anna Olivier, Souvenir de S. A. Prince, Souvenir d'un Ami, Princess Beatrice, Innocente Pirola, Marie Van Houtte, Madame Bravy, Sunset, E. Gifford, Maman Cochet, and M. Furtado; Messrs. PRIOR & SONS, Colchester, was a good 2nd, followed by Messrs. P. CANT & Co.

AMATEURS.

There was an important extra class for twelve varieties, in which Captain J. RAMSAY, the local secretary, presented a 10-gallon Silver Cup, which was easily secured by Mr. A. TAYN, Leatherhead.

For nine singles, not less than six varieties, open only to amateurs within ten miles of Perth, Mr. T. HALL, Mr. E. CROFT MURRAY, Ryde, was successful. This secured the National Rose Society's silver medal; but the same exhibitor was very unlucky in not securing the challenge cup and also the Queen's Gold Medal in the local classes, the presence of duplicates disqualifying both stands.

Tea and Noisette Section.—The Prince Memorial Cup, for twelve distinct single trusses, was won by Mr. HILL, Gosport, Esq., Bath, with C. Mermé, Cheopetra, Rubens, Ernest Metz, Anna Olivier, M. Niel, The Bride, Souvenir d'un Ami, C. de Palisse, Meles, Souvenir d'Elie Vardon, Madame Bravy, Princess of Wales, Innocente Pirola, Marie Van Houtte, E. Gifford, C. Kuster, and Cornelius Koch. Mr. P. CAMPION, Reigate, was the only other competitor.

GARDEN ROSES.

These were undoubtedly the feature of the show, clean, bright, and in good form. Owing to the lack of entries, and little prospect of a representative show at so early a date in a late season, the committee introduced three extra classes for these popular and early roses. We were sorry to see such little competition; but probably this was owing to the short notice and the late date.

In the chief classes for BURSHEFTON, that for thirty-six bunches of distinct varieties found Messrs. COOLING & SONS, Bath, 1st, with a magnificent stand, consisting of B. Moreau, macrantha, Fellenburg, Polyantha, Isabella Sprunt, Baroda Jug, Persia Yellow, Commandante Beusapaire, Madame Félou, Marquis of Salisbury, Madame P. Ducher, Canons, William Brough, C. Regis, Claire Jacquier, Rosa pomifera, Papa Gontier, Arne of Gierstein, Blanche de Coubert, Parity (new), Gloire des Polyanthes, Rugosa rubra, W. A. Richardson, Lucia white, Demelt Becard, Rosa Mundi, Tuscan, Dr. Grill, White Cabbage, Hombé, York and Lancaster, and Crested Cabbage. Messrs. G. PAUL & SONS, Cheshunt, 2nd; and Mr. C. TURNER, Slough, followed.

In the extra class for eighteen bunches, Messrs. CANT & Co., Colchester, just succeeded in beating Mr. J. MATTHEW of Oxford; the last-named was very unfortunate in having a neighbour's lid crashed upon his stand a few minutes before the judging, the accident apparently robbing him of 1st honours.

Amateurs.—Mr. A. T. TATE, Leatherhead, won for eighteen bunches, distinct: Moss erista, Mochata nivea, W. A. Richardson, and Allister Stella Gray, were especially good.

In an extra class for twelve, Rev. J. H. PRINCE, Gosport, Havering, was successful; Carmine Pillar, Janet's Pride, W. A. Richardson, Paul's Single White, and York and Lancaster, being his best.

Mr. F. W. CAMPION, Reigate, won with a splendid stand of six trusses; W. Allen Richardson, Laurette Messing (extra), B. de Palisse, Macrantha, and Reine Olga de Wurtemberg, all being good. Miss C. CARTER, Ryde, followed closely.

An extra (open) class for nine bunches of single-flowered varieties found Messrs. COOLING & SONS, Bath, just ahead of G. PAUL & SONS, Cheshunt.

NEW ROSES.

These were few. Messrs. G. PAUL & SONS' Rev. Allan Chesley is the most distinct, our among H.P.'s, reminding one of a very bright Madras Castle.

Purity, from Messrs. COOLING & SONS, Bath, is decidedly a good pillar Rose, free in every respect; a pure white, and when fully expanded, of much the same size and form as Souvenir de Paul Neyron.

Unfortunately it was a boisterous day, and when our report went off 3 P.M., rain was falling smartly.

SILVER MEDAL BLOOMS.

Nurserymen.—Messrs. PRIOR & SONS, Colchester, for Lady Mary Fitzwilliam; and Mr. G. PRINCE, Oxford, for Comtesse de Nadailac.

Amateurs.—Mr. A. TAYN, Leatherhead, for H.P. Mrs. J. Laing, and for Tea Madame de Wattivale.

THE VICTORIAN ERA.

Horticultural Show at the Crystal Palace.

JUNE 23, 24.—The only effort made to hold a horticultural exhibition during the Queen's commemorative festivities, that should in some measure illustrate the phenomenal advance that has been made in the development or improvement of various plants during the Victorian Era, must be admitted to be a comparative failure. The Crystal Palace Company a few months ago drew up a schedule containing classes for plants that have been introduced or wonderfully improved since the accession of the Queen, and, as was remarked in these columns recently, it offered facilities for the exhibition of features quite novel in present-day flower shows, but the show has been held, and has proved disappointing. The Palms that were expected to form an interesting feature, did not turn up, the Conifers that to say so seldom were exhibited in competition, were to one the least not equal to expectation. There was little competition even in the classes that were represented, and more than that, the class for a miscellaneous group of plants of species "introduced during Her Majesty's Reign" did not have a single entry. The Carnations from Mr. MARTIN R. SMITH, the Begonias from Mr. WARE, the Caladiums from Messrs. REED, &c., were good, but such plants as Gloxinias, Crotons, Ferns, &c., were represented by exhibits not by any means entitled to be described as first class. The chief reason for this was probably the inconvenient day upon which the show was held. This circumstance was foreseen, we believe, but other fixtures at the Palace prevented another day being selected. Possibly, also, the catastrophe that befell exhibits at York may have had some influence, as well as the fact that the Richmond Show was held upon the same day.

Mr. THOS. S. WARE, Hale Farm Nurseries, Tottenham, obtained 1st prize for a group of BEGONIAS. The group, which had to be staged upon a space not exceeding 300 square feet, faced all ways, with paths around it. There was a large pyramidal dome in the centre, and a smaller one at each corner. The central ones contained double and single-flowered varieties, the smaller ones in each case for most part exhibiting the charms of a particular variety. Thus one small one was composed of plants bearing a rose-tipped double Begonia, named Samuel Pope, a very pretty one indeed. On another mound was a fine crimson double, named Mr. Robert Lawford; on another, an excellent new Camellia-flowered white double named Jubilee Queen. The interspaces between the ones were prettily furnished with more Begonias, with no names attached, but of a very desirable strain, and a probably desirable amount of suitable scenery.

CALADIUMS at this stage of the Victorian era are probably more popular than any other foliage plant; but it was left to Messrs. PEED & SONS, of Bussell Park Nurseries, West Norwood, to exhibit the splendour of the varieties of the present day—their indescribable colourings and markings, and the desirable dwarf habit many of them possess. Messrs. Peed's exhibit was an isolated circular group, composed of bold, well-folaged plants, each of some height, beautifully coloured, and individually embedded in a ground of Ferns. As we have recently had occasion to particularise many of the best varieties, when reporting the Temple Show, it is unnecessary to insist on their merits here.

CANES were shown by two firms, who have commenced the cultivation of the plants on a large scale—Messrs. PAUL & SONS, Cheshunt, and H. CANNELL & SONS, Swanley. Unfortunately the group from Messrs. H. CANNELL & SONS was disqualified. This circumstance was probably the means of sending the 1st prize to the group from Messrs. PAUL & SONS, which was staged upon steps immediately facing the great organ. Messrs. Paul displayed a choice selection of new varieties, and a few seedlings—probably of their own raising; and we also noted a variety with reddish salmon-coloured flowers named Jubilee.

Messrs. CANNELL'S group contained a good number of closely-placed plants, bearing large, strong inflorescences, and illustrative of brilliantly-flowered varieties. A few bushes of the Queen of Cheshunt and other varieties, cut and inserted in jars to face the group, resulted in the disqualification, but a salutation of a Silver Medal was awarded.

CROTONS were but poorly represented, nothing like they are usually exhibited at some provincial shows. There was one group, and it contained some large specimens of well-known varieties edged with smaller plants, but the whole lacks the colour and finish which might have been expected by a nurseryman's collection. This may be said without depreciating the quality of the amateur's group from Mr. W. HOWE, gr. to HENRY TATE, Esq., Park Hill, Streatham Common. A 2nd prize was awarded.

CONFERS were shown for competition by Mr. JNO. R. BOX, West Wickham and Croydon. This exhibit was comprised

of a large number of plants, but they were small for the greater part, and disappointing in a class the 1st prize for which was £20. As the public could only see the collection from the face of it, many of the varieties at the back could be recognised only with difficulty. As a rule, they consisted of popular and well-known species, including the golden, variegated or slender habited varieties of some of them. A 3rd prize was awarded.

FERNS only obtained a 2nd prize in the class set apart for them. The exhibit was one from Mr. HOWE, and it included specimens of Nephrolepis, Darseloides, Adiantum cristata, Adiantum concinnum latum, A. Thoudii, Lomaria Blechnoides, Adiantum cuneatum, A. carolinense, Marattia fraxinea, and Adiantum Williamsonii.

GLOXINIAS came from Messrs. J. PEED & SONS, who staged a nice group of plants upon a table, and gained a 1st prize.

HARDY ALPINE PLANTS from Mr. THOS. S. WARE, gained a 1st prize, and the exhibit represented a considerable variety of these diminutive but beautiful flowering plants. Some of the Veronicas, Dianthus, Campanulas, and Arabis were among the most showy.

HARDY HERBACEOUS PLANTS were shown by Mr. THOS. S. WARE and Messrs. WALLACE & Co., Kilsnief Gardens, Colchester. The 1st prize was awarded to Messrs. WALLACE for a collection very similar to their usual exhibits, including an excellent lot of Calochortis, Lilium, and Iris. A. Thoudii, Lomaria Blechnoides, Adiantum cuneatum, A. carolinense, Marattia fraxinea, and Adiantum Williamsonii. The flowers were very choice, and if they did not represent hardy herbaceous plants, very fully; they capitally illustrated the bulbous section to which they belong. The new Eldorado type of Calochortis in endless variety are very beautiful. Rather stronger specimens, perhaps than the flowers type, the flowers are similarly blotched, but the ground coloured is some shade of rose usually in place of white. Calochortis clavatus, a new very large yellow-flowered species, with purple anthers, is to be recommended. In addition to the Lilies and Irises, there were a few Peonies, Ornithogalum, Gladiolus, and Iris, too. Freesia's, from Mr. WARE, whose group very greatly exceeded the space permitted, was awarded 2nd, for a miscellaneous collection of hardy herbaceous flowers, including some bulbous species; and Mr. JNO. R. BOX was 3rd.

GRASSES were shown in two classes, by nurserymen and amateurs. In the former class, the 1st prize was awarded to the only exhibitor, Messrs. W. L. LEWIS & Co., Southgate, whose collection was composed, for the greater part, of Calceolarias, and a few species in variety, with a few choice Cyperipediums, Miltonias, &c. The amateurs' group of Orchids was a most tasteful one, and included considerable variety. Many of the Odoetoglossum crispum varieties being of fine merit; Vanda cernicea, Cymbidium, Dendrobium, and Masdevallias, &c. were included.

PERALROONIES, show and fancy, from Mr. TURNER, Royal Nurseries, Slough, included upwards of twenty well-bloomed plants. A group of zonal Pelargoniums from Mr. M. LAASER, Roebuck Nursery, Enfield Highway, obtained a 3rd prize to another class.

ROSES are cut blooms in a collection of twenty-four, and as a group of plants, both exhibits from Mr. CHAS. TURNER, Royal Nurseries, Slough, were awarded 2nd prize in each instance.

NON-COMPETITIVE EXHIBITS.

One of the most important of these was the collection of CONFERS from Messrs. J. VEITCH & SONS, Royal Esotic Nursery, Chelsea. Some of the plants were 6 or 7 feet high, excellent specimens, that had been lifted from the open ground and dropped into large shallow baskets. There were two magnificent plants of Abies pungen argentea, exceedingly well coloured; also a pair of Taxus baccata comensis, a golden form of much merit; Retinospora plumosa argentea and aurea, R. obtusa aana and aurea, R. squarrosa, R. filifera, Cedrus atlantica argentea, and C. a. aurea, Cupressus Lawsoniana albo-variegata, Abies celsa inverta, a curious looking drooping variety; A. Veitchii in brachyphylla, Picea omorika, P. orientalis aurea, P. excelsa Renonati, Tsuga Sieboldii, Thuja dolabrata, and other species; Taxus fastigiata aurea variegata, Cedrus Deodara aurea, and Pinus montana were some of the fine things shown in Messrs. Veitch's group, which was deservedly awarded a Gold Medal.

CARNATIONS from MARTIN R. SMITH, Esq., The Hayes (gr. M. Birk), took the form of an exceptionally large group of plants, all of which were splendid examples of culture, and bore a profusion of bloom. The variety of colour in the flowers, too, was very great; and when it is stated that the whole of the varieties exhibited had been raised in Mr. SMITH'S garden, the credit due to this energetic and successful amateur may be estimated. A Gold Medal was awarded.

"LIVE-STOCK HOBBIES."—The appearance of this journal weekly, and procurable for a penny only, should be hailed with pleasure by all who keep a pet animal. The publication deserves notice as dealing not merely with dogs, cats, and the more usual household animals, but with the treatment of out-of-the-way pets, such as newts, lizards, &c. It is certainly an imperative duty to treat captive creatures properly, and any magazine which helps to this result is deserving of support.

IMPROVEMENT OF PASTURES.

IN connection with the Leicestershire Chamber of Agriculture, Mr. J. J. Willis, of the Rothamsted Agricultural Station, delivered a lecture in the Council Room, Leicester, recently, on the important subject of "Improvement of Pastures."

After a few introductory remarks, Mr. Willis said the Rothamsted grass experiments were commenced in 1856, about 7 acres were selected and divided into twenty-four plots, to each of which a different manure was applied. The flora of the plots at the beginning was fairly uniform over the whole area, but by the application of various manures the flora of the plots has now become entirely changed.

The quantity of hay obtained has varied on each plot very considerably according to season; but taking the average of the whole period of forty years, the plot to which no manure had been applied has given about one ton of produce per acre per annum; while

Another very important lesson to be gathered from the Rothamsted experiments is, that a bad pasture, or one that has been wrongly treated, may be brought back to its original goodness, and even improved, by proper manorial applications.

In considering the improvement of pastures, the first necessity to which attention was directed was that of drainage; an imperfectly-drained field can never be converted into a first-class pasture. Coarse grasses, sedges, and useless weeds will always make up the bulk of such a pasture. The herbage will be sour and of little feeding value, because it will be badly matured. Butter made from a badly-drained pasture will be inferior in quality, and will quickly sour. A considerable improvement in a pasture may frequently be effected by liming, chalking, or giving a dressing of marl or road scrapings.

Reference was made to some experiments at Rothamsted on the application of lime and chalk to pasture. With lime or chalk alone, the produce of

10 or perhaps 11 inches across, and the standards by measurement are 7 inches long and 5 inches wide. The colour of this form may be described as creamy-white, and it struck one as not having the usual cast of grey-lilac, and as being without the usual large display of dots. Iris Gateasi was illustrated in the *Gardeners' Chronicle* of July 5, 1890, and is known as the finest of the *Oncocyclus*, or perhaps any other section of the genus; but here we find a flower far surpassing any former promise made by the species.

Another choice Iris, and a novelty of which we had not before heard, is *I. Mancei*, of Florida, considered, we believe, by Mr. Gerard, as a variety of *I. hexagona*. From this, however, it is apparently quite distinct, differing at first sight in the broader leaves, which are not so tall and erect; and in the flowers, which have narrower parts, and are produced, according to the specimen, low down and near the ground. It is hardier, we learn, than *I. hexagona*, but it does not seem to be so ornamental.

Iris are not the only feature of this garden. The display of *Erenurus robustus*, though now fairly over, must lately have been very fine. *Incarvillea Delavayi* is in great perfection, and is noteworthy as one of the finest of hardy plants, several stems in this instance rising, perhaps, to a height of 18 inches, and bearing numerous splendid *Bigonia*-like flowers of bright rose-red colour. A very charming feature we found in the grassy and flowery chalk banks, which are beautiful in the way of the "wild garden." They are planted with a variety of subjects suitable for such a position; among which the *Linum*, white *Dianthus*, and red *Valerian* are now dominant, as if, indeed, for the Jubilee week. It is a hard thing to kick against the pricks of sweet mother Nature, but the result, as here, is often delightful when art goes with her, hand in hand. *R. Irwin Lynch*.

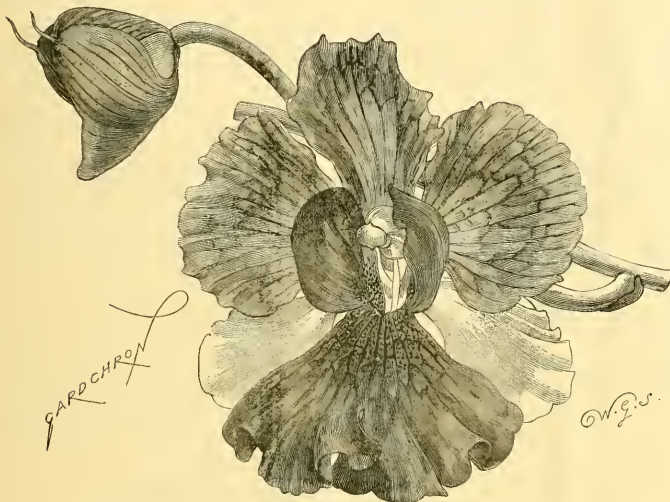


FIG. 165.—VANDA × MISS JOAQUIM, OBTAINED BY CROSSING V. TERES AND V. HOOKEIANA.

(See Report of Royal Horticultural Society, in our issue for June 19, 1897.)

the plot the most heavily manured has given about 4 tons per acre per annum.

The number of plants found in the mixed herbage on the unmanured-plot is between fifty and sixty, while on the highest manured-plot the number has decreased to fifteen, and here 99 per cent. of the crop is composed of a few of the coarsest grasses.

None of these plots are recommended for exact imitation, but they teach many valuable lessons. In the first place, these experiments show, that however good a pasture may be, it is capable of being entirely spoiled by mismanagement. In the second place, the fact is brought out that it is not the description of seed sown which determines the character of a pasture, but its manorial or other treatment. For example, if the crop is cut for hay, the effect will be one way; while if the herbage is fed off by stock, the influence will be another. Again, mineral manures, such as basic slag, kainit salt, potash, bone meal, and superphosphate will produce one effect; while nitrogenous and forcing manures, such as nitrate of soda, ammonia-salts, or guano, will produce another effect entirely. A combination of these manures or farmyard dung will yield a different result from either of the former.

hay was raised one-half more; and with lime and chalk together, the produce was nearly doubled on certain plots. The quality of the herbage was also considerably improved, Clovers and Vetchlings were encouraged, so as to yield 47 per cent. of the whole crop.

Reference was also made to the assimilation of the nitrogen of the atmosphere by the Clover family, and the improvement of the pasture thereby, with a corresponding increase of crop.

The most suitable manures for the encouragement of the Clovers, and the better description of grasses, was dealt with, the subject being illustrated by diagrams.

CHOICE IRISES.

THERE is always something good to be seen in Professor Foster's garden; and although it is now late for the best of the genus which makes it famous, there is in flower perhaps the finest example of *I. Gateasi* ever seen. The stem is about 2 feet high, and it bears a flower which is quite one of the largest seen in a garden, and certainly the largest that could be grown out-of-doors. It could not be less than



[The term "accumulated temperature" indicates the aggregate amount, as well as the duration, of degree of temperature above or below 42° Fabr. for the period named; and this combined result is expressed in Day-degrees—a "Day-degree" signifying 1° continued for twenty-four hours, or say any other number of degrees for an inversely proportional number of hours.]

Deductive Above (+) or below (-) Mean for the week ending June 19.	TEMPERATURE.				RAINFALL.	BRIGHT SUN.						
	ACCUMULATED.											
	Day-deg.	Day-deg.	Day-deg.	Day-deg.								
0	3	- 54	0	- 1	6	2	107	17	9	28	30	
1	4	- 51	0	- 35	+ 12	1	98	13	7	11	29	
2	0	aver	92	0	+ 36	- 78	10	+ 93	10	6	36	32
3	0	aver	168	0	+ 77	- 124	4	+ 92	11	7	53	35
4	1	- 99	0	+ 34	- 115	3	aver	90	13	2	47	34
5	1	+ 116	0	+ 95	- 180	aver	86	11	1	57	56	
6	3	- 60	0	- 22	- 21	22	+ 103	19	7	26	32	
7	2	- 60	0	+ 32	- 92	12	+ 103	15	3	33	33	
8	0	aver	163	0	+ 97	- 138	6	+ 105	20	6	37	37
9	5	- 63	0	+ 40	+ 8	20	+ 113	18	7	24	30	
10	3	- 81	0	+ 43	- 57	8	+ 104	20	1	31	33	
11	0	aver	113	0	+ 186	- 80	6	+ 112	17	4	47	45

The Districts indicated by number in the first column are the following:—

- 0, Scotland N. Principal Wheat-producing Districts—1, Scotland, E.; 2, England, N. E.; 3, England, E.; 4, Midland Counties; 5, England, including London, S.; Principal Grassing, &c., Districts—6, Scotland, W.; 7, England, N. W.; 8, England, S. W.; 9, Ireland, N.; 10, Ireland, S.; * Channel Islands.

THE PAST WEEK.

The following summary record of the weather throughout the British Islands for the week ending June 19, is furnished from the Meteorological Office:—

"The weather during this period was very unsettled and rainy generally, although the earlier days had been fine and bright over England. The rainfall over Ireland, the north of England, and the greater part of Scotland was very heavy.

"The temperature was high at the commencement of the week, the absolute maximum readings ranging from 84° in the 'Midland Counties' and 'England, S.' and from between 80° and 82° in the other English districts, to 85° in 'Scotland, N.,' and 80° in 'Ireland, S. and W.' Later on the daily maxima were very low for the time of year, especially in the north and north-east. The lowest of the minima, which were recorded either on the 17th or 19th, ranged from 37° in 'Scotland, N.,' 38° in 'Scotland E.,' and 39° in 'Ireland, N.,' to 45° in 'England, S.W.,' and to 50° in the 'Channel Islands.' The average for the week was considerably below the mean value for the time of year over Ireland and Scotland, and slightly below it to the 'Midland Counties' and 'England, N.W.,' in most of the other English districts the weekly value just equalled the normal, but in 'England, S.' it was a little above it.

"The rainfall exceeded the mean in all districts excepting 'England, S.,' in the north and west the fall was unusually heavy, being about five times the mean in 'Scotland, N. and W.,' four times in 'Ireland, N.,' and three times in 'England, N.E. and S.E.' The highest total rainfall was at individual stations were 4.25 ins. at Glasgow, and 3.85 ins. at Ardrossa, at the latter station 3 inches fell in about twenty hours during the middle of the week.

"The bright sunshine exceeded the mean in most parts of England, but was less elsewhere. The percentage of the possible duration ranged from 57 in 'England, S.,' and the 'Channel Islands,' 56 in 'England, S.W.,' and 53 in 'Ireland, E.,' to 24 in 'Ireland, N.,' and 17 in 'Scotland, E.,"

MARKETS.

COVENT GARDEN, JUNE 24.

[We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Thursday, by the kindness of several of the principal salesmen, who revise the list, and who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general averages for the week preceding the date of our report. The prices depend upon the quality of the produce, and vary in the market, and in demand; and they may fluctuate, not only from day to day, but often several times in one day. Ed.]

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

s. d. s.	d. s. d.	s. d. s.	d. s. d.
Adiantum, per doz.	12 0-30	Heliotropes, dozen	4 0-6 0
Aspidistra, per doz.	12 0-30	Hydrangea, per dozen	4 0-18 0
— specimen, each	5 0-10 0	Labellias, per dozen	3 0-4 0
Calceolarias, dozen	4 0-6 0	Marguerites, p. doz.	6 0-9 0
Crassula, per plant	2 0-3 0	Mignonette, p. doz.	4 0-6 0
Dracaena, each	1 0-7 6	Musk, per doz.	3 0-6 0
— varieg., per doz.	12 0-24 0	Palms various, ea.	2 0-10 0
Evergreen shrubs, in variety, doz.	6 0-24 0	— specimens, ea.	10 6-84 0
Ferns, small, doz.	1 0-2 0	Pelargoniums, per doz.	9 0-12 0
— varieg., doz.	5 0-12 0	Rhodantias, dozen	4 0-6 0
Ficus elastica, each	1 0-7 6	Spiraea palmata, per doz.	9 0-12 0
Foliage plants, per doz.	12 0-36 0	Spiraea, per doz.	6 0-9 0
Fuchsia, per doz.	4 0-6 0		

BEDDING PLANTS AND ROOTS FOR THE GARDEN in variety coming very good.

FRUIT.—AVERAGE WHOLESALE PRICES.

s. d. s.	d. s. d.	s. d. s.	d. s. d.
Cherries, Duking, per 3 bush.	10 0-12 0	Nectarines, select, fruit, per doz.	12 0-15 0
— White, p. 1 bush.	6 0-12 0	— Medium, p. doz.	6 0-8 0
— Black, p. 1 bush.	10 0-16 0	— Seconds, p. doz.	3 0-4 0
Figs, per doz.	2 0-6 0	Peaches, select, fruits, per doz.	9 0-15 0
Grapes, Gros Colmar, per lb.	2 6-2 6	— Medium, p. doz.	4 0-6 0
— Alicante, doz.	5 6-2 6	— Seconds, p. doz.	2 6-3 0
— Harehams, per lb.	2 6-2 6	Pine-apples, St. Michael, each	5 0-3 0
— selected, per lb.	2 6-2 6	Strawberries, per doz.	10 0-12 0
— 2nd quality, per lb.	1 0-1 0	— King golden, per bushket, 5lb.	2 6-3 0
— Muscats, select, per lb.	2 6-3 0	— Southampton, per bushket	1 0-2 0
— 2nd quality, per lb.	1 0-1 0	— Middlesex and Kent, p. doz. lb.	6 0-9 0
Melons, each	2 0-3 0		

VEGETABLES.—AVERAGE WHOLESALE PRICES.

s. d. s.	d. s. d.	s. d. s.	d. s. d.
Artichokes, Globe, per doz.	1 0-1 0	Mushrooms (Indoor) per lb.	0 8-10 0
Asparagus, Worcester, per bundle	1 6-2 0	Per bushket	4 0-6 0
Bears, French, p. lb.	6 4-1 0	Salad, small, per doz. bunches	1 6-2 0
Cucumbers, home-grown, select, p. doz.	9 0-4 0	Tomatoes, Ch.anel Island, per lb.	6 0-3 0
— 2nds, per dozen	1 6-2 0	— selected, per doz. lb.	4 0-5 0
Horse-radish, Foreign, p. bundle	1 6-1 9	— Medium, do.	3 0-4 0
		— Seconds, do.	2 0-3 0

POTATOS.

With a fairly brisk trade for new Potatoes, prices rule as follows:—Jersey Flukes and Kidneys, £10 to £11; St. Malo and Chertburg, £8 to £9; Old Dutch Maincrop, 80s. to 90s.; others, 30s. to 50s. John Bath, Wellington Street, Covent Garden.

OUT FLOWERS.—AVERAGE WHOLESALE PRICES.

s. d. s.	d. s. d.	s. d. s.	d. s. d.
Arums, p. 12 bunches	2 0-4 0	Mignonette, per doz. bunches	2 0-4 0
Bouvardias, per bun.	0 4-0 6	Myosotis, or Forget-me-not, 12 bunch	1 6-3 0
Carnations, pr. doz. blooms	0 0-2 0	Orchids—	
— per doz. bun.	4 0-6 0	— Cattleya, 12 blms.	6 0-10 0
Corn Daisy, per doz. bunches	1 6-2 0	Otdontoglossum	2 0-4 0
Coronillas, per doz. bunches	1 6-3 0	— Paphiopedilum	2 0-4 0
Eucharis, per dozen blooms	3 0-4 0	Pansies, doz bun.	1 6-2 0
— per dozen	1 6-2 0	Pelargoniums, scarlet, per 12 bun.	3 0-6 0
— per 12 sprays	0 4-0 6	Pyrethrums, 12 lb.	1 6-2 6
Gladioli, various, per doz. bunches	3 0-6 0	Ranunculus, 12 lb.	2 0-4 0
Irish, p. doz. bun.	4 0-12 0	Roses, 12 bunches	6 0-1 0
Lilium candidum, per dozen	1 6-2 0	— yellow (Mar. ehal), per doz.	1 6-4 0
Lilium Martago, per doz. blooms	2 0-4 0	— red, per dozen	0 4-2 0
Lily of the Valley, dozen sprays	1 0-2 0	— pink, per doz.	2 0-4 0
Madroair Fern, per 12 bunches	4 0-8 0	— Safrano, p. doz.	1 6-2 0
Marguerites, per 12 bunches	0 4-0 6	Roses, 12 bunches	2 0-4 0
		Stephanotis, dozen sprays	1 6-2 0
		Sweet Sultan, per dozen bunches	3 0-4 0
		Tuberose, 12 blms.	0 9-1 0

ORCHID-BLOOM in variety.

FRUIT AND VEGETABLES.

GLASGOW: June 23.—The following are the averages of the prices current here during the past week:—Apples, 6d. per punnet; Tomatoes, Gurnsey, 8d. doz.; Scotch, 1s. 6d. doz.; Grapes, home, 2s. to 3s. doz. Vegetables: Turnips, French, white, 1s. to 1s. 2d. per bunch; do. white, 1s. 6d. to 1s. 6d. per dozen bunches; do. Swedes, 2s. to 2s. 6d. per cwt. do. French, new, 1s. to 1s. 2d. per bunch; Carrots, French, new, 1s. to 1s. 2d. per bunch; do. Dutch, 1s. 6d. to 2s. 6d. per dozen bunches; Cabbages, 8d. to 1s. per dozen; do. Dublin, 8d. to 9d. doz.; Cauliflowers, Scotch 1s. to 1s. 6d. per bunch; do. Dublin, 2s. 6d. to 3s. doz.; Parsnips, 4s. 6d. to 5s. per cwt.; Herbs, assorted, 1d. to 2d. per bunch; Mint, green, 6d. per bunch; Onions, Globe, 7s. per cwt.; Parsley, 5s. per stone; Potatoes, Best, 6d. doz.; do. Paris, 4d. per lb.; Broccoli, 2s. 6d. to 3s. doz.; do. Best; Brussels, 2d. 6d. to 3d. per basket; Asparagus, French, 1s. 6d. to 1s. 9d. per bunch; do. English, 2s. to 2s. 6d. doz.; Cucumbers, 4s. to 5s. per dozen; Lettuce, round, 1s. to 1s. 2d. per dozen; do. French, 1s. 3d. to 1s. 6d. doz.; do. Cos, 3s. 6d. to 4s. doz.; Radishes, 7d. to 1s. per doz. bunches; Horseradish, 2s. 2d. to 2s. 6d. per bunch; French Beans, 6d. to 9d. per bushket; Mushrooms, 1s. to 1s. 6d. per doz.; Dublin, 8d. to 9d. doz.; Cress, 6d. to 9d. per dozen; Endive, 1s. 6d. to 2s. per dozen; Spinach, 2s. to 3s. per stone; Rhubarb, 2s. 3d. to 2s. 9d. per cwt.

LIVERPOOL: June 23.—Average of the prices current at the undernoted markets:—St. John's: Potatoes, 1s. per peck; do., new, 1d. to 2d. per lb.; Peas, 1s. 6d. per peck; Asparagus, 1s. 6d. to 2s. per 100; Cucumbers, 7d. to 6d. each; Apricots, 1s. per dozen; Gooseberries, 8d. per lb.; Pines, English, 4s. to 4s. 6d. each; Cherries, 6d. to 8d. per bushket; Strawberries, 8d. to 1s. doz.; Mushrooms, 1s. doz. Birkenhead: Potatoes 8d. to 10d. per peck; do. new, 1d. to 1 1/2d. per lb.; Peas, 1s. 2d. to 1s. 4d. per peck; Asparagus, 2s. to 2s. 6d. per 100; Cucumbers, 2d. to 6d. each; Apricots, 1s. per dozen; Gooseberries, 2d. to 3d. per lb.; Currants, red, 6d. to 8d. per lb.; do. black, 8d. to 9d. doz.; Cherries, 6d. to 8d. doz.; Strawberries, 8d. to 1s. doz.; Mushrooms, 1s. doz. North: Potatoes 8d. to 10d. per peck; do. new, 1d. to 1 1/2d. per lb.; Peas, 1s. 2d. to 1s. 4d. per peck; Asparagus, 2s. to 2s. 6d. per 100; Cucumbers, 2d. to 6d. each; Apricots, 1s. per dozen; Gooseberries, 2d. to 3d. per lb.; Currants, red, 6d. to 8d. per lb.; do. black, 8d. to 9d. doz.; Cherries, 6d. to 8d. doz.; Strawberries, 8d. to 1s. doz.; Mushrooms, 1s. doz. Birkenhead: Potatoes 8d. to 10d. per peck; do. new, 1d. to 1 1/2d. per lb.; Peas, 1s. 2d. to 1s. 4d. per peck; Asparagus, 2s. to 2s. 6d. per 100; Cucumbers, 2s. to 3s. doz.; Cabbages, 10d. to 1s. 10d. doz.; Peas, 2s. 9d. to 3s. per bushket.

CORN.

AVERAGE PRICES OF BRITISH CORN (per imperial qr.), for the week ending June 19, and for the corresponding period of 1896, together with the difference in the quotations. These figures are based on the Official Weekly Return—

Description.	1896.		Difference.
	s. d.	s. d.	
Wheat	25 1	27 0	+ 1 11
Oats	22 8	23 9	+ 1 1
Barley	15 1	15 0	- 1 11

Obituary.

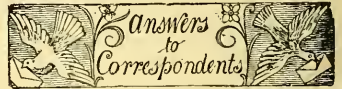
JAMES MENZIES.—Allow me space whereto to record the death of my dear old friend, Mr. James Menzies (age 71), who died at South Lytchet, near Poole, Dorset, where he had been gardener for many years; and who was held in great respect by all who knew him. He was one of the now few remaining pupils of the late Charles Mackintosh of Clarendon, and Dalkeith Palace Gardens. P. D.

GARDENING APPOINTMENTS.

MR. O. GRIGG, as Head Gardener to the Earl of Ashburnham, Ashburnham Place, Battle, Sussex.
 MR. F. W. RUSSELL, for the past ten years Head Gardener to E. T. DOKAT, Esq., Woodgreen Park, Cheshunt, as Head Gardener and Staff to H. TROWER, Esq., Tewin Water Park, Welwyn, Herts.
 MR. J. H. WALKER, late of Buckden Towers, as Gardener to J. LINTON, Esq., Stirlow House, Buckdon, Huntingdon.

ENQUIRY.

CRUZY CANNAS.—Will some reader communicate the true and complete pedigree of the Cruzy Cannas, i.e., of Madame Cruzy? Burlington.



CARNATION "GRASS" SPOTTED: Carnation: The plant is affected with a species of fungus, Helminthosporium echinulatum. There is no known cure, and you should pull up the plants and burn them.

CORRECTION.—The three varieties of Carnations, Cecilia, Barras, and Helmsman that received Awards of Merit at the last meeting of the Royal Horticultural Society, were exhibited by Mr. Blyck, gr. to Martin R. Smith, Esq., and not by Mr. Turner, as was stated in our report.—HARDY TREES AND SHRUBS OF THE VICTORIAN ERA.—Allow us to correct a slight error made by your correspondent. He is wrong in attributing the introduction of Baderia stenophylla, see p. 399, to our firm. I think you will find it was sent out by Messrs. Fisher & Holmes of Sheffield. Cytometra elegans was introduced by my brother John in 1862, not 1867. Harry J. Veitch.

GRAPES WITH SPOTTING ON THEM: J. L. The berries are affected with the fungus Gloeosporium heliophilum. Cut out all affected berries, and burn them forthwith. There is no known cure.

LILIA TENEBROSA: G. G. The failure to expand its flowers after removal from the stove is probably due to the lower temperature of the house, to the plant carrying too many flowers, and perhaps to the amount of water afforded not being appreciably lessened. A plant twelve months rotted could scarcely fail to be established, and the fact that it showed flower freely is a proof that it had taken to the potting materials.

NAMES OF PLANTS: Correspondents not answered in this issue are requested to be so good as to consult the following number.—A. P. H. Staphylea pinnata.—E. H. C. Coteyledon umbilicus.—H. W. The specimen is quite withered, and has no flowers. It is most probably Saecularia coronopus, Wart Cress.—Hura & Son. Probably Linaria vulgaris, Toad Flax, but there are no flowers.—Kent. Pylaeococcus erenatus and Coteyledon chrysantha; Euphorbia, next week.—T. T. Nannatum. Trichophylla Galeottiana.—H. M. E. Aërides Houlettianum, Rosa microphylla, and Campanula paella.—Box without Letter. 1, Cornus silueica spathi; 2, Robinia pseudo-acacia variegata; 3, Azara microphylla; Weigela hortensis variegata; 5, Cotoneaster Simonsii; 6, Koeleria paniculata.

COMMUNICATIONS RECEIVED.—Ch. de B. R. L. H.—H. H. R.—G. D. T. E.—D. I. M.—H. M.—A. Goswell (next week)—C. Turner.—R. B. J., Ireland.—A. J., N. B.—G. B.—J., D.—E. M.—R. P.—H. M.—W.—W. M.—W. E. B. A. L., Munich.—W. J. B.

SPECIMEN PHOTOGRAPHS, &c., RECEIVED WITH THANKS.—R. L.—R. H.

CONTINUED LARGE INCREASE in the CIRCULATION OF THE "GARDENERS' CHRONICLE."

IMPORTANT TO ADVERTISERS.—The Publisher has the satisfaction of announcing that the circulation of the "Gardeners' Chronicle" has, since the reduction in the price of the paper,

Increased to the extent of more than 90 per cent., and that it continues to increase weekly. Advertisers are reminded that the "Chronicle" circulates among COUNTRY GENTLEMEN, and ALL CLASSES of GARDENERS and GARDEN-LOVERS at home, that it has a specially large FOREIGN and COLONIAL CIRCULATION, and that it is preserved for reference in all the principal Libraries.





